

**NEW!**

# Power Feed™ 10A Controller



**AUTOMATIC WIRE FEEDERS**



## ArcLink Controller for Power Wave AC/DC Systems.

Built on the enduring and trusted foundation of the NA-5 controller and the innovations of the new Power Feed 10M wire feeder, the Power Feed 10A Controller is the next generation in automatic submerged arc feeding. Designed for use with the Power Wave AC/DC 1000 power source, the Power Feed 10A eliminates the need for a separate AC and DC controller, making this powerful hard automation system controllable, adaptable and easy to use. The user-friendly control panel offers a single-point of control over the entire welding cell, including the Power Wave's Waveform Control Technology™, delivering an unprecedented level of control over wave balance, amplitude and frequency.

### Processes

#### Submerged Arc

#### Advantage Lincoln

- Versatile system set-up options for stand-alone or PLC configurations help you customize the weld cell to make your operations as efficient as possible.
- Lincoln's Waveform Control Technology™ gives you the ability to select the right waveform for each application.
- The Power Feed 10A Controller provides clear dual digital display of set-up and weld modes, six memories, AC controls, strike/start/end options, travel stop/start, and timers.
- Controls can be adjusted on-the-fly to change penetration and/or deposition rates with Variable Frequency, Variable Amplitude and Variable Balance.
- Easy-to-use switch panel can be removed and used as a Remote Control Pendant to create a versatile work station set-up.
- The Power Feed 10SF and Power Feed 10S wire drive systems are reliable and durable.
- The motor conversion kit allows the use of existing NA-3, NA-4, and NA-5 feed head mounting hardware.
- Manufactured under a quality system certified to ISO 9001 requirements and ISO 14001 environmental standards.
- Three-year warranty on parts and labor.

### Description



#### Unit Includes:

Power Feed 10A Control Box, Remote Pendant, 10-ft. Remote Pendant Cable

#### Unit Requires:

Power Wave AC/DC 1000 power source, and either the K2312-1 Power Feed 10SF Wire Feed Head for fixed hard automation, or the K2370-1 Power Feed 10S Head for mounting to a Lincoln TC-3 Travel Carriage. (other options may apply.)

#### Recommended General Options

Power Feed 10SM Motor Conversion Kit (converts Lincoln NA-style wire drives), ArcLink Cable, Flux Hopper, Feeder Control Cable (14-pin to 14-pin and 5-pin to 5-pin), Contact Nozzle Assembly, Contact Jaw Assembly, Positive Contact Assembly, Linc-Fill Attachments, Narrow Gap Deep Groove Nozzle, Concentric Flux Cone Assembly, Tandem Arc Framework, Tandem Reels, Twinarc Contact Assemblies, Tiny Twinarc Assemblies, Tiny Twinarc Solid Wire Straightener, TC-3 Travel Carriage, Vertical Lift Adjuster, Horizontal Adjuster, Wire Reel Assembly for 50-60 lb. Coils, Spindle Kit – 2 in. hub, SpreadArc Oscillator, Flux Screen, Magnetic Flux Screen Separator

#### Recommended Power Source Option

Power Wave AC/DC 1000

#### Order

K2362-1 Power Feed 10A Controller

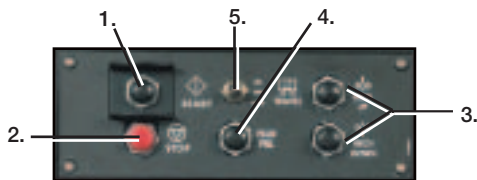
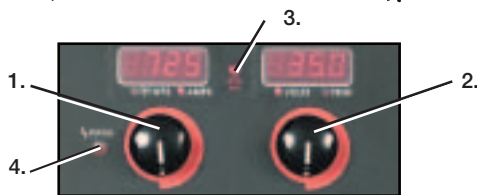
### TECHNICAL SPECIFICATIONS

Product Name	Product Number	Input Power <sup>(1)</sup>	Rated Output Current / Duty Cycle	Gear Box	Wire Feed Speed Range <sup>(1)</sup> ipm (m/min)	Wire Size Range <sup>(1)</sup> Inches (mm) Solid	Dimensions H x W x D Inches (mm)	Net Weight lbs (kg)
Power Feed 10A Controller with Wire Drive	K2362-1	40 VDC	1000A/100%	142:1 <sup>(1)</sup>	10-200 (.25-5.08)	5/32 - 7/32 (4.0 - 5.6)	15 x 13 x 4 (381 x 259 x 102)	25 (11.3)
				95:1 <sup>(1)</sup>	10-300 (.25-7.62)	1/8 - 5/32 (3.2 - 4.0)		

(1) 142:1 gear box is standard. Conversion Kit supplied for conversion to 95:1 with Wire Drive (K2370-1, K2312-1, or K2311-1)

**FEATURES**

**A Closer Look**



- 1.
- 2.
- 3.
- 4.
- 5.

**Power Feed 10A Control Panel**

The Power Feed 10A control panel controls and monitors the advanced capabilities of the Power Wave AC/DC 1000 in a single, simple, easy-to-understand user interface display panel. The Power Feed 10A communicates using ArcLink, and can easily integrate with custom controls and PLCs, in multiple configurations.

**Dual Display Dual Encoder Panel**

- 1. Wire feed speed (WFS) or amps.
- 2. Voltage
- 3. Arc Established Indicator - illuminates when a true arc has been established.
- 4. **ArcLink**. Status LED - indicates system component ArcLink communication status. Normal operation is a steady green light.

**Switch Panel**

- 1. START - Starts the weld sequence, using strike controls.
- 2. STOP - Stops the weld sequence, using crater/burnback controls.
- 3. INCH - Up/Down. Inches wire up or down without welding current
- 4. FLUX FILL- Activates flux hopper.
- 5. TRAVEL- Controls motion in either manual or automatic modes.

**Remote Pendant** - The switch panel can be removed and used as a handheld pendant for remote control.



- 1. 14-PIN Remote Control Connector
- 2. 4-PIN TC-3 Carriage Connector
- 3. 3-PIN Flux Hopper Receptacle
- 4. 5-PIN ArcLink Connector
- 5. Auxiliary Circuit Access Holes

PERFORMANCE



WHAT IS NEXTWELD®?

Nextweld integrates Lincoln's technologies, processes and products to create a comprehensive, flexible, user-friendly welding system that can increase efficiency and reduce fabrication costs.

MSP4 and Memory Panel

Memory panel

Up to six user settings and two procedure settings can be saved and retrieved using the Memory Panel. Allows the operator to save weld parameters and set-up options, such as Timers, Start Options, End Options, AC Controls, etc., before welding begins.



Weld Procedure Limit Controls

The MSP4 panel can be configured to limit the operator's range of control of weld procedure settings (Wire Feed Speed, Crater Time, Burnback Time, etc.)

Lockout/Security Controls

Configurations that prevent the operator from changing authorized weld settings can be set at four different lockout levels to provide a custom level of control.

Mode Select Lockout

Locks START/END Options, AC Controls, Weld Modes and Wave Options – or various combinations of each.

Encoder Panel Lockout

Locks either right, left or both control knobs.

Memory Panel Lockout

Locks any or all of six memories saved.

Full Lockout

Locks all functions listed above.

Infrared IR Port

Weld Manager™, the Lincoln Electric Palm® OS-based software product, builds upon the usability and efficiency of the Power Feed 10M user interface design. It offers remote access and availability to system information, set-up, and configuration, allowing you to manage your Power Wave system from the palm of your hand. The versatile design allows for wireless communication with the Infrared Port on the Power Feed 10A Controller or through a serial connection and your cradle - the decision is yours.

- Quick and easy user interface set-up that can be transferred across Power Feed/Power Wave systems.
- Ensure parameters are maintained by locking out numerous options on the user interface panel.
- Easily set-up the system and ensure repeatability between multiple cells by transferring memory through a 'back-up'/'restore' or a memory 'clone'.
- Verify current system information right on the production floor.
- Ensure security of the loaded settings through password protection.
- Any Palm Operating System version 3.5 or higher.



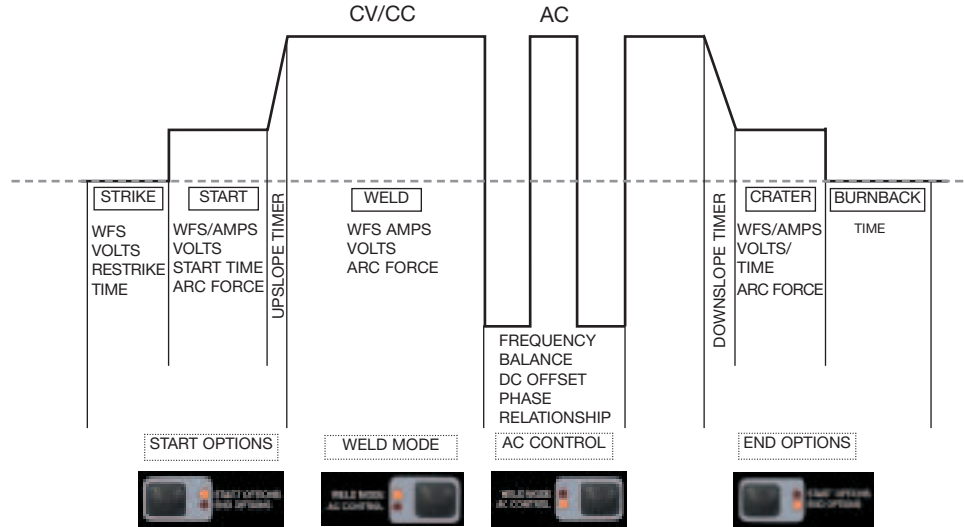
**PERFORMANCE**

**Waveform Control Technology®**



**Driving Superior Welding Performance**

Lincoln's Waveform Control Technology controls and shapes the output waveforms (or weld modes) to adapt to virtually any application, material or weld position.



**SET-UP OPTIONS (User Preferences)**

Set-up Mode can store basic user preferences like those listed below, or it can be used to display configurations or access diagnostic tools.

- START ARC FORCE/CRATER ARC FORCE – The Arc Force setting allows the customer to set a specific level of current during three stages of the welding process.
- START: In the start state the arc force sets the starting current for the first 250 mS of the weld. The operator can control the starting characteristics by adjusting arc force to get a hotter or colder start.
- WELD/CRATER: Arc Force is used in these two states to set a specific amount of current if the arc goes into a short. This setting can be adjusted to create more stable operation during the welding process.
- UPSLOPE/DOWNSLOPE TIME – Adjustable time for smooth transition from start to weld and from weld to crater.
- RESTRITKE TIME – The time between an electrode short and automatic shutdown – can prevent serious flaws in the weld. Also shuts off output if the wire stops feeding.
- TRAVEL START/END – Start Travel with arc or Start Button strike and End Travel with arc out or Stop Button.



**START OPTIONS**

- STRIKE – Adjustable run-in speed that is used for optimizing arc starting. Set independently of weld wire feed speed.
- START – Provides separate welding procedure for an adjustable time at the start of the weld. A Hot Start procedure is used when penetration is required at the arc start location and when run-on tabs are being used.
- WIRE FEED SPEED/AMPS/VOLTS/TIME – Set weld parameters to begin at arc start.



**WELD MODE**

Choose weld procedure-AC, DC, wire size, consumable type.



**AC CONTROL**

VARIABLE FREQUENCY – The Power Wave AC/DC 1000 and Power Feed 10A Controller system has the widest range of wave frequency adjustment (0 – 100 Hz) in the industry. Increase Frequency for a more stable arc and less penetration; decrease frequency for more penetration.

VARIABLE BALANCE – By setting the correct wave balance (the ratio between positive and negative waveforms), the operator has greater control of the welding process. Increase Balance to get more penetration and less deposition; decrease balance to get more deposition and less penetration.

DC OFFSET (VARIABLE AMPLITUDE) – By setting the correct DC Offset, the operator can define the appropriate penetration and deposition rate, depending on the application.

PHASE RELATIONSHIP – The Power Wave AC/DC 1000 balances the "push" and "pull" of the arc interactions in a multi-arc environment by using phase shifting to prevent arc blow and optimize the arc stability of virtually any wave-form combination.



**END OPTIONS**

- CRATER – Provides a separate welding procedure for an adjustable time at the end of the weld. A crater fill procedure is used to regulate the bead width and/or fill the crater at the end of the weld.
- BURNBACK – Adjustable control over the time delay between the time that the wire feeding stops and the arc is extinguished to prevent the wire from sticking in the crater.

**SYSTEM CONFIGURATION**

**Mounting and Motion Controls**

The Power Feed 10S series of Automatic Wire Drives are specially designed for hard automation, submerged arc welding. The heavy-duty gear box and feed plate are well-known in the industry for years of reliable performance. Now featuring a new high-torque, permanent magnet motor with more power and even more reliable performance under high heat conditions, The Power Feed 10S series wire drives are the most rugged in the industry.

**Single or Tandem Arc**

**Power Feed 10S (K2370-1)**

(3/32 to 7/32 in. solid wire)

The Power Feed 10S is required to mount to a TC-3 undercarriage for moving parts. It has many axes of rotation for ease of fixturing and locating. Sturdy feed plate houses knurled drive rolls for positive accurate wire feeding of large diameter welding wire (includes flux hopper, wire straightener cross seam adjuster, head mounting hardware, and 2-5ft 4/0 weld cables).  
(95:1 Gear Ratio Conversion Kit included.)



*Power Feed 10S (K2370-1)*

**Power Feed 10SF (K2312-1)**

(3/32 to 7/32 in. solid wire) Use the Power Feed 10SF for fixed hard automation applications. Fixture mount wire drive assembly includes motor, gearbox, drive rolls, guidelines and straightener (fixture builder's head with wire straightener - insulators not included).  
(95:1 Gear Ratio Conversion Kit included.)



*Power Feed 10SF (K2312-1)*

**TC-3 Travel Carriage (K325S, F, HCS or HCF)**

The self-propelled travel carriage carries the wire feed head and Power Feed 10A in either direction on a beam. It can operate manually or automatically with the weld controls. The TC-3 comes in two speed ranges (S and F) in standard or high capacity (HC) models. The standard carriage is equipped for one wire feed head, and the high capacity carriage is for multi-head systems.

- Standard Carriage – K3255S: 5-75 ipm (0.1-1.9 m/min.)  
– K3255F: 15-270 ipm (0.4-6.9 m/min.)
- High Capacity Carriage – K325 HCS: 5-75 ipm (0.1-1.9 m/min.)  
– K325 HCF: 15-270 ipm (0.4-6.9 m/min.)



*TC-3 Travel Carriage (K325S, F, HCS or HCF)*

**Conversion Kit Power Feed 10SM (K2311-1)**

For use with NA Series Gear Head. The ArcLink™ motor retrofit is used to replace existing motor on NA-3/4 OR NA-5 wire feed head.  
(95:1 Gear Ratio Conversion Kit included.)



*Power Feed 10SM Motor (K2311-1)*

**Multiple Arc**

**Systems Interface (K2282-1)**

This external controller is required for multi-arc applications. The arc-to-arc interaction is controlled by offsetting the phase relationship in 90° increments, as each arc is added.



*Multi-Arc System Interface (K2282-1)*

**Programmable Logic Controller (PLC)**

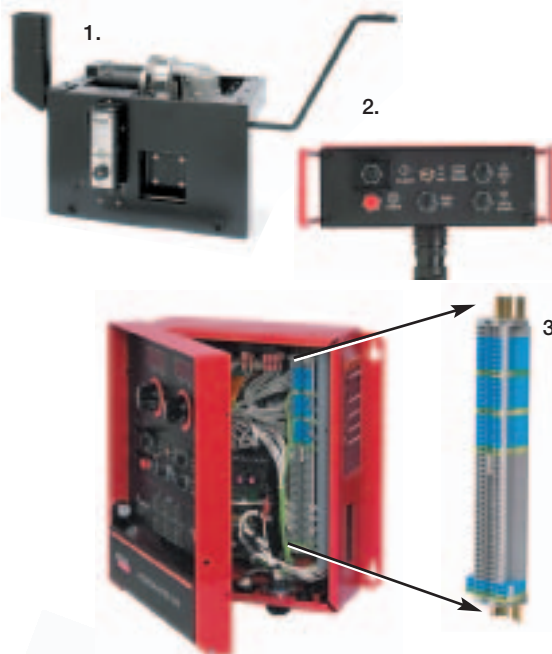
The Power Wave AC/DC 1000 and Power Feed 10A can easily integrate into a customer-supplied PLC system. Motion of the TC-3 travel carriage can be controlled from the PLC, while individual weld controls such as mode selection, amperage, and voltage are still controlled from the Power Feed 10A.



*Power Feed 10A Controller  
www.lincolnelectric.com*

### Set-up Options

1. The Power Feed 10A is shipped configured for easy connection to the Lincoln TC-3 Travel Carriage and the Automatic Flux Hopper. (115V AC required to power this configuration.)
2. The switch panel can be easily removed and used as a Remote Control Pendant for versatile work station set-up.
3. Terminal strip access inside the Power Feed 10A to interface your custom controls and/or PLCs, or to connect auxiliary circuits.
  - Shutdown inputs can be used for limit switches, PLC inputs, etc in order to shut down the welding operation for any reason.
  - Safe and easy to use with numbered and color-coded connectors for clear identification of inputs.



### QUALITY & RELIABILITY

- Powerful permanent magnet DC motor – 32 volt motor on a 40-volt bus. Rugged aluminum die cast plate is durable and resilient in high heat.
- Lincoln's design philosophy adds an extra factor of safety in all components and construction to maximize reliability and service.
- 100% software controlled — Software based controls can be upgraded as new features become available.
- Easy access for serviceability.
- Modular construction allows for easy service/maintenance.
- Three-year warranty on parts and labor.
- Manufactured under a quality system certified to ISO 9001 requirements and ISO 14001 environmental standards.



Printed circuit boards are environmentally-shielded using Lincoln's engineered potting and protective frame trays.



For system configuration details, see publication E10.96 on the Power Wave AC/DC 1000™ power source.

### RECOMMENDED OPTIONS

#### ARCLINK®/LINC-NET CONTROL EXTENSION CABLES

Description	Order Number
8 ft. (2.5m) Without weld cable	K1543-8
16 ft. (4.8m) Without weld cable	K1543-16
25 ft. (7.6m) Without weld cable	K1543-25
50 ft. (15.2m) Without weld cable	K1543-50
100 ft. (30.4m) Without weld cable	K1543-100

#### CONTROL CABLE (14 PIN TO 14 PIN)

Description	Order Number
12 ft. (3.6m)	K1785-12
16 ft. (4.8m)	K1785-16
25 ft. (7.6m)	K1785-25
50 ft. (15.2m)	K1785-50
100 ft. (30.4m)	K1785-100

#### WELD POWER CABLES 0-250 ft. @ 80% Duty Cycle, Qty. 2

Description	Order Number
Lug to Lug, 4/0, 600A, 60% duty cycle, 35 ft.	K2163-35
Lug to Lug, 4/0, 600A, 60% duty cycle, 60 ft.	K2163-60
Lug to Lug, 4/0, 600A, 60% duty cycle, 110 ft.	K1842-110

#### WELD POWER CABLES 0-250 ft. @ 100% Duty Cycle, Qty. 3

Description	Order Number
Lug to Lug, 3/0, 600A, 60% duty cycle, 10 ft.	K1842-10
Lug to Lug, 3/0, 600A, 60% duty cycle, 35 ft.	K1842-35
Lug to Lug, 3/0, 600A, 60% duty cycle, 60 ft.	K1842-60

## RECOMMENDED OPTIONS

### GENERAL OPTIONS



#### Power Feed 10SFM Motor Conversion Kit

Used to convert NA-series wire drives into PF-10S wire drives. Includes an ArcLink™ motor retrofit kit used to replace existing motor on NA-3, 4 or 5 wire feed head. For use with NA-series gear head.

Order K2311-1



#### ArcLink Cable (5-pin)

Includes two leads plus two mating terminals. Connects Power Feed 10A controller to Power Wave AC/DC 1000.

Order K1543-XX

#### Flux Hopper for Tandem Arc

Flux Hopper for K387 mountings.

Order K389



#### Feeder Control Cable (14-pin)

Connects Power Wave AC/DC 1000 to wire feeder.

Order K1785-xx



#### Contact Nozzle Assembly

Single arc contact nozzle assembly for 1/8" (3.2 mm) diameter wire. Operates at currents generally below 600 amps. Outer flux cone gives full flux coverage with minimum consumption.

Order K231-x



#### Contact Jaw Assembly

Single arc contact jaw assembly for 1/8-7/32" (3.2-5.6 mm) diameter wire. Rugged contact jaws for maximum life at currents over 600 amps.

Order K226R



#### Positive Contact Assembly

For single arc welding at high currents (optional T12928 water cooling attachment recommended when Innershield® welding over 600 amps).

Order K148x



#### Linc-Fill® Long Stickout Extension

Linc-Fill long stickout extension for K148A Single Arc Positive Contact Nozzle Assembly. Required for long stickout technique.

Order K149-x



#### Concentric Flux Cone Assembly

For use with K148B, Positive Contact Nozzle Assembly. Gives concentric flux coverage around the electrode.

Order K285

#### Narrow Gap Deep Groove Nozzle

For single arc 3/32" (2.4 mm) diameter wire welding on thick walled steel plate with nearly parallel-sided, narrow gap joint preparations.

Order K386

### Tandem Arc Framework

Provides mountings with desired positioning adjustments for two standard Automatic Wire Feed Heads. Includes insulation and hardware to permit direct mounting to a high capacity TC-3 Carriage, or to the user's gantry or fixture for either direction of travel.

Order K387

### Tandem Reels

Two Wire Reel Mounting for TC-3.

Order K390



### Large Wire Twinarc® Contact Assemblies

Feeds two 5/64" (2.0 mm), 3/32" (2.4 mm) or 1/8" (3.2 mm) wires for submerged arc welding on "Fast-Fill" joints or hardfacing beads.

Order K225



### Tiny Twinarc® Contact Assemblies

Feeds two electrodes for high speed submerged arc welds. Includes contact nozzle, wire guides, drive rolls and guides, and a second wire reel and mounting bracket.

Order K129-x



### Tiny Twinarc Solid Wire Straightener

Straightens wire diameters .045 thru 3/32" (1.2 thru 2.4 mm). Particularly valuable on longer electrical stickout procedures.

Order K281



### TC-3 Self-Propelled Travel Carriage

Carries head and controls in either direction on a beam. Operates manually or automatically with the weld controls. Requires 115V AC 50 or 60 hertz input power.

Order K325S, F, HCS, HCF



### Vertical Lift Adjuster

Provides 4" (102 mm) hand crank adjustment of vertical head position. It also includes up to 3-3/4" (95.2 mm) in-and-out horizontal adjustment with stops that can be preset for simple repetition of the same adjustment.

Order K29

### Horizontal Adjuster

Provides crank adjustment of head position. Has 2" (51 mm) horizontal travel.

Order K96



### Wire Reel Assembly for 50-60 lb. Coils

Accommodates 50 lb. (22.7 kg) or 60 lb. (27.2 kg) coils of wire on automatic wire feeders. The unit includes a wire reel mounting spindle and braking system.

Order K299

**RECOMMENDED OPTIONS**

**GENERAL OPTIONS CONT.**



**Spindle Kit - 2 in. hub**  
For fixture and other custom installations. Features 2" (51mm) O.D. spindle for mounting Readi- Reels and 2" (51mm) I.D. spools up to 60 lb. (27.2 kg) capacity.  
**Order K162-1**



**Flux Screen**  
For submerged arc welding. Removes large particles from reused flux. Includes air-driven vibrator.  
**Order K310**



**SpreadArc Oscillator**  
Oscillates head across the line of travel. Calibrated dwell time and oscillation speed controls permit the Spreadarc to cover large areas quickly with smooth beads of minimum admixture.  
**Order K278**



**Magnetic Flux Screen Separator**  
For submerged arc welding. Removes foreign magnetic particles from reused flux.  
**Order K58**

**POWER FEED 10A CONTROLLER ORDER FORM**

PRODUCT DESCRIPTION	ORDER NUMBER	QUANTITY	PRICE
<b>POWER FEED 10A CONTROLLER</b>	<b>K2362-1</b>		
<b>RECOMMENDED GENERAL OPTIONS</b>			
Power Feed 10SM Motor Conversion Kit	K2311-1		
ArcLink Cable	K1543-xx		
Flux Hopper for Tandem Arc	K389		
Feeder Control Cable (14-pin to 14-pin)	K1785-xx		
Contact Nozzle Assembly	K231-x		
Contact Jaw Assembly	K226R		
Positive Contact Assembly	K148x		
Linc-Fill Long Stickout Extension	K149-x		
Narrow Gap Deep Groove Nozzle	K386		
Concentric Flux Cone Assembly	K285		
Tandem Arc Framework	K387		
Tandem Reels	K390		
Large Wire Twinarc Contact Assemblies	K225		
Tiny Twinarc Contact Assemblies	K129-xx		
Tiny Twinarc Solid Wire Straightener	K281		
TC-3 Self-Propelled Travel Carriage – Standard	K325S, K325F		
TC-3 Self-Propelled Travel Carriage – High Capacity	K325HCS, K325HCF		
Vertical Lift Adjuster	K29		
Horizontal Adjuster	K96		
Wire Reel Assembly for 50-60 lb. Coils	K299		
Spindle Kit - 2 in. hub	K162-1		
SpreadArc Oscillator	K278		
Flux Screen	K310		
Magnetic Flux Screen Separator	K58		
<b>RECOMMENDED POWER SOURCE OPTIONS</b>			
Power Wave AC/DC 1000	see publication E10.96		
	<b>TOTAL:</b>		

**CUSTOMER ASSISTANCE POLICY**

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

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

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