

**NEW!**

# Power Wave® 455M & Power Wave® 455M/STT®

**MULTI-PROCESS WELDERS**

## Superior Arc Performance. Revolutionary Communication.

For welding thicker materials in robotics, hard automation and semiautomatic applications, choose the Power Wave 455M. For those applications where heat input control, minimal distortion, and reduced spatter are essential, opt for the Power Wave 455M/STT. Both models feature Waveform Control Technology™ for superior arc performance on a variety of materials, including steel, stainless steel, aluminum and nickel alloys, and custom control of the arc for each wire type and size for consistent welds time after time. The Power Wave 455M and 455M/STT are designed to be part of a modular, multi-process welding system in which power sources can be added or removed and still communicate with other industrial machines to create a highly integrated and flexible welding cell.

### Processes

Stick TIG MIG Pulsed STT<sup>(1)</sup> Flux-Cored Gouging

### Advantage Lincoln

- Lincoln's Waveform Control Technology™ gives you the ability to select the right waveform for each application, enabling patented processes like Pulse-On-Pulse™ and Power Mode™.
- Choose from over 60 standard welding waveform programs that offer a broad range of electrode size, type and shielding gas combinations to give you optimal appearance, penetration, beadshape and travel speed for each application.
- Optional communication modules provide networking and process monitoring capabilities via DeviceNet or Ethernet.
- Push-Pull capability delivers ultimate aluminum welding with the Power Feed 10M wire feeder.
- Utilizes ArcLink™ — the leading digital communication protocol for welding, making it the best choice for seamless, time critical integration with the power source.
- Power Wave 455M/STT features Lincoln's Surface Tension Transfer® Process, which controls heat input for great penetration control and reduced spatter and fumes.
- Manufactured under a quality system certified to ISO 9001 requirements and ISO 14001 environmental standards.
- Three-year warranty on parts and labor.

<sup>(1)</sup> Power Wave 455M/STT only.

### Description

Output   Input  

### Recommended General Options

DeviceNet Interface Module, Ethernet Interface Module, Analog Interface Module, Wave Designer™ Software, Dual Cylinder Platform Undercarriage, CoolArc® 40 Water Cooler

### Recommended Wire Feeder Options

Power Feed 10M Bench, Power Feed 10M Dual Bench, Power Feed 10M Boom, Power Feed 10M Dual Boom, Power Feed 10R, Power Feed 15M

### Recommended Stick Options

Accessory Kit

### Recommended TIG Options

PTA-17V or PTA-26V TIG Torch

### Order

K2202-1 Power Wave 455M  
K2203-1 Power Wave 455M/STT  
K2375-1 Power Wave 455M/Power Feed 10M Ready-Pak™

## TECHNICAL SPECIFICATIONS

Product Name	Product Number	Input Voltage	Rated Output Current/Voltage/Duty Cycle	Input current @Rated Output	Output Range	Dimensions H x W x D in (mm)	Net Weight lbs (kg)
Power Wave 455M	K2202-1	208/230/460/575/3/50/60	60Hz: 450A/38V/100% (570A/43V/60%)	60Hz: 58/53/25/22A (82/78/37/31A)	5-570A	26.1 x 19.9 x 32.9 (663 x 505 x 835)	286 (130)
Power Wave 455M/STT	K2203-1		50Hz: 400A/36V/100% (500A/40V/60%)	50Hz: 49/45/23/18A (67/61/31/25A)			293 (133)



**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. Waveform Control Technology™ and digital communications

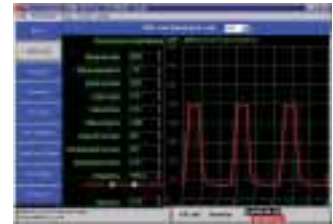
provide the foundation for Nextweld innovations like Pulse-On-Pulse™, Power Mode™, STT® and ArcLink®. Look for Nextweld for ultimate arc control, high efficiency/reliability and seamless system integration.

**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. In addition, you can have our Application Engineering department add or customize standard waveform programs or request Lincoln Wave Designer™ software to build or customize waveform programs yourself.

For more information see Nextweld Document #NX-1.10



**Lincoln Nextweld Innovations for Challenging Applications**

Waveform Control Technology makes it possible to take advantage of Lincoln Nextweld innovations like these patented processes using the Power Wave 455M and a Power Feed 10M wire feeder:



*Pulse-On-Pulse on 3 mm Aluminum*

**Pulse-On-Pulse™** uses a sequence of varying pulse wave shapes to produce a TIG-like bead appearance and excellent weld properties when MIG welding aluminum. Pulse-On-Pulse controls arc length and heat input together, making it easier to achieve good penetration.

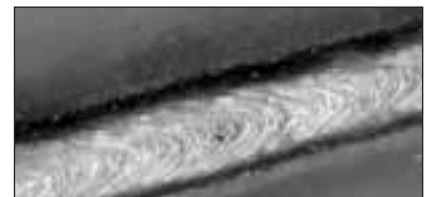
For more information see Nextweld Document #NX-2.10

**Power Mode™** uses high-speed regulation of output power to deliver extremely fast response to changes in the arc, for example, when using a whip technique. The result is improved MIG welding performance, including low spatter, very uniform, consistent bead wetting and controlled penetration. Power Mode benefits are especially apparent on low voltage applications on thin steel and stainless steel material less than 20 gauge (0.7 mm). It also delivers excellent arc characteristics on aluminum and other alloys such as silicone bronze and nickel alloys.

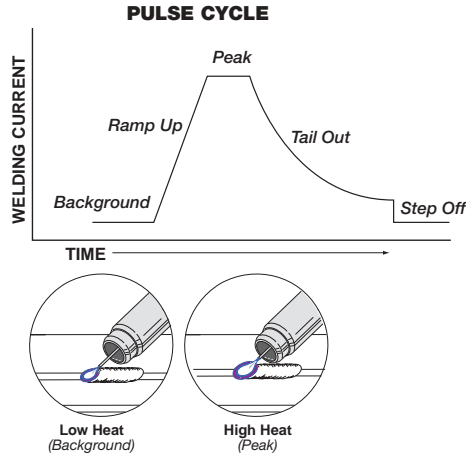
For more information see Nextweld Document #NX-2.60



*Power Mode reduces spatter and improves bead appearance, even for low voltage procedures on stainless.*



*Power Mode aids bead wetting and penetration on aluminum.*



**Pulsed MIG** varies weld current between peak (high heat) and background (low heat) current to provide better control of heat input, which reduces warping and burnthrough on thin materials. Pulsed MIG also enables in-the-flat, horizontal, vertical up, or overhead welding without a slag system. It can be used in hard automation, robotic, and high production semiautomatic applications. Optimized GMAW-P waveforms are readily available to use on aluminum, carbon steel, high strength low alloy steel, stainless steel, and nickel alloys.

For more information see Nextweld Document #NX-2.70

**STT® (Surface Tension Transfer®)** is a controlled GMAW short circuit transfer process that uses current controls to adjust the heat independent of wire feed speed, resulting in superior arc performance, good penetration, low heat input control, and reduced spatter and fumes.

For more information see Nextweld Document #NX-2.20



Conventional CV short circuit transfer using CO<sub>2</sub> and .045" solid wire.



STT using CO<sub>2</sub> and .045" solid wire. Note reduced spatter and fume.

**Digital Communications**  
Fast, Reliable, System-Wide



ArcLink is the leading digital communications protocol for the arc welding industry. It integrates all welding components for seamless, time-critical data transfer. The strength of ArcLink lies in the ability to communicate with each system component in a pre-defined welding language. In addition, ArcLink is an open communications protocol, meaning that Lincoln Electric publishes how it works and encourages other companies to adopt it.

*DeviceNet*

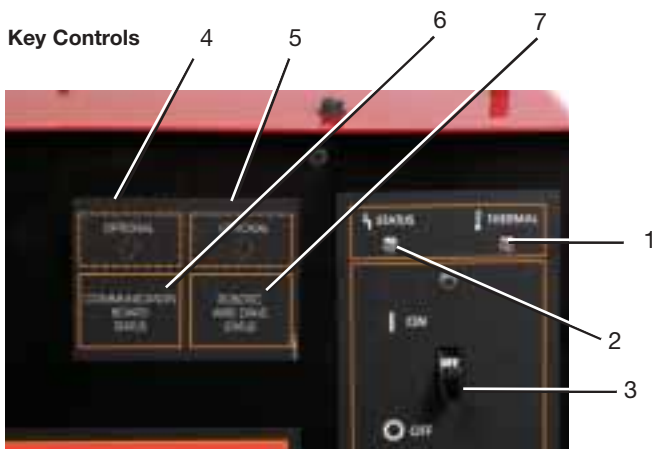
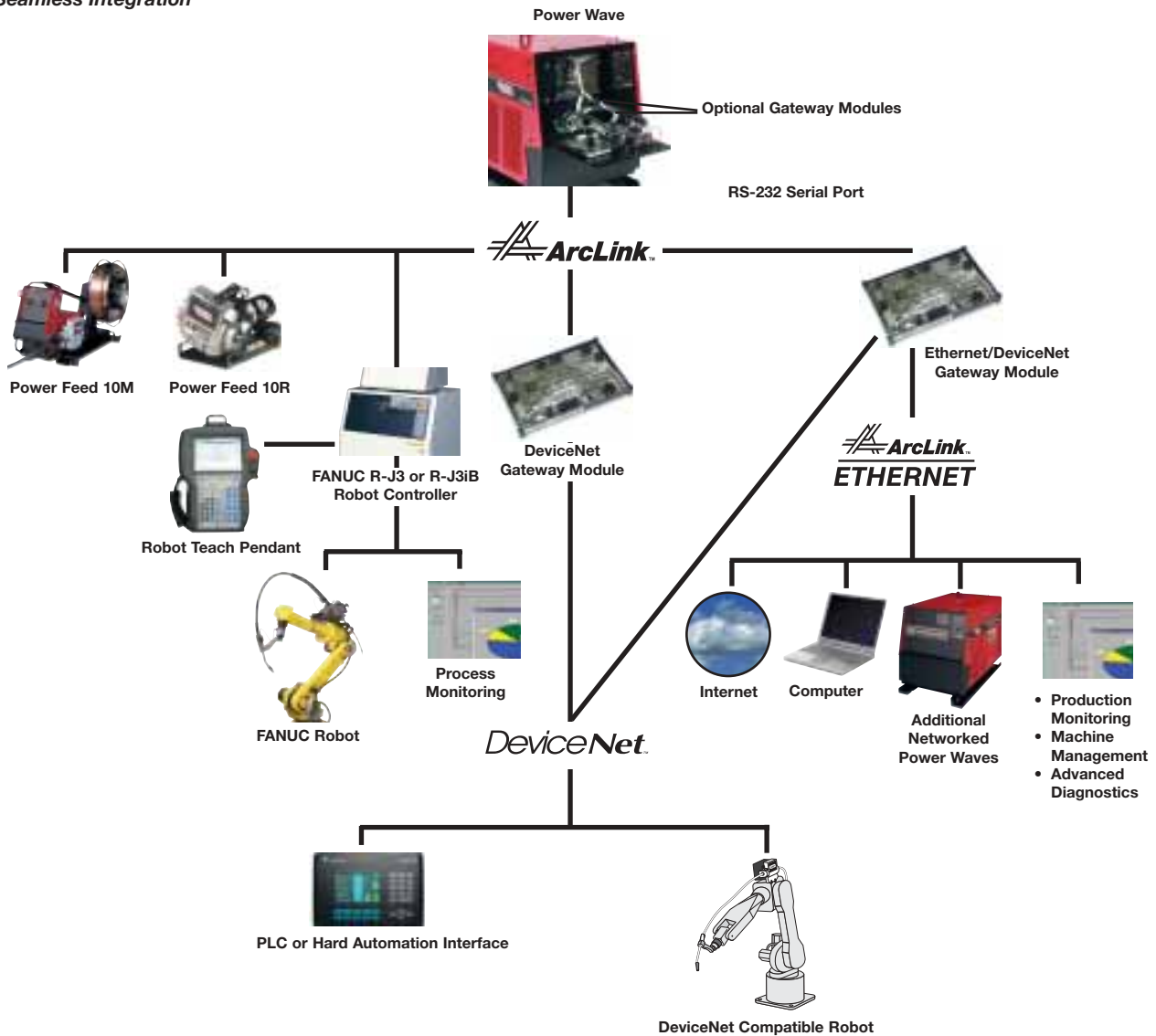
DeviceNet is a communications protocol widely used throughout the automotive, semiconductor, and packaging industries. In its typical application, DeviceNet works in conjunction with a programmable Logic Controller (PLC) and several system devices to provide a framework for data trafficking and monitoring.



Ethernet is a specification for networking that provides the ability to pull large amounts of information into monitoring and supervisory applications.

For more information see Nextweld Document #NX-1.30

**Digital Communications, Cont.**  
Seamless Integration



Power Wave 455M and 455M/STT Front Panel

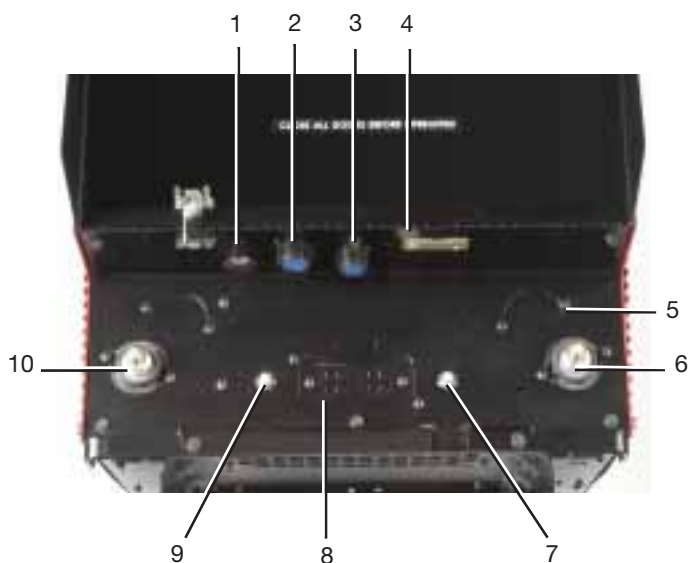
1. Thermal Light
2. Power Supply Status Light
3. On/Off Switch
4. Communication Module Status Light (DeviceNet or Ethernet/DeviceNet) (Optional)
5. Feeder Status Light (for Power Feed 10R) (Optional)
6. Communication Interface Module – DeviceNet or Ethernet/DeviceNet upgrades can be field installed.
7. Robotic wire drive module upgrade can be field installed.

**Key Controls, Cont.**

*Easy Modular Expansion*



*Power Wave 455M and 455M/STT Front Panel*



*Front Lower Panel*

1. DeviceNet or Ethernet/DeviceNet Receptacle (optional)
2. ArcLink Receptacle
3. Work Sense Lead Receptacle
4. RS-232 Serial Communication Port
5. STT Stud (not shown)
6. Positive Output Stud
7. CB1 (10A) 40VDC
8. 115 VAC Duplex Receptacle
9. CB1 (10A) 40VDC
10. Negative Output Stud

**Power Wave® 455M/Power Feed 10M Ready-Pak™**

Take the hassle out of ordering — Order a Ready-Pak™ pre-assembled welding package.

**Includes:**

- Power Wave 455M Power Source
- Power Feed 10M Single Bench Model Wire Feeder
- .040-.045" (1.0-1.1 mm) Drive Roll and Guide Tube Kit
- Magnum® 400 Gun and Cable Kit
- Work Lead Package
- Harris® Flowmeter Regulator (includes adapter and 10 ft. hose)

**Order K2375-1**



*Power Wave 455M and Power Wave 455M/STT*

**QUALITY AND RELIABILITY**

**Design**

Safety, reliability and serviceability are built into Lincoln's inverter design.

- A Power Wave inverter operates at a high efficiency (88-90%) with a 95% minimum power factor at rated output and is capable of operating from a universal input voltage (208 to 575 volts).
- Open construction for preventative maintenance and diagnostics.
- Thermostatically protected.
- Electronic output over-current protection and electronic input over-voltage protection.
- Operating Temperature Range: -20°C to +40°C.
- Storage Temperature Range: -40°C to +40°C.
- Double insulation and varnish on main transformer.
- Shielded heavy duty input contactor in tightly sealed environmental enclosure.
- Electrical connections coated with insulating compound for long term reliability in harsh environments.
- Automotive grade sleeves protect leads from abrasion.
- Tough PC Boards — potted and trayed, filed with epoxy, double locked harness connectors, environmentally protected connectors, electrical silicone grease, high current rating. Extra attention to detail provides excellent protection from dirt, dust and the environment.
- Efficient Cooling System with industrial motor with sealed bearings and metal fan blade.
- Fan-As-Needed™ — reduces power consumption and the amount of debris that gets drawn into the machine by shutting the fan down when it is not needed.



*Open Construction*



*Coated Electrical Connections*



*Automotive Grade Sleeves*



*Cooling System*



*Trayed and Potted PC Board*

**Testing and Reliability**

All Lincoln inverters are fully tested for reliability before and after assembly.

- Each machine undergoes a functional weld test to ensure performance.
- Lincoln inverters are operated in an environmental chamber under extreme conditions of temperature and humidity.
- Mechanical testing, including vibration and drop testing, is performed
- Extensive temperature testing is performed to ensure that all components are running within allowable range.
- Three-year warranty on parts and labor.
- Manufactured under a quality system certified to ISO 9001 requirements and ISO 14001 environmental standards.
- Designed to the IEC/EN 60974-1 standard. Meets tough NEMA EW 1, CSA NRTL/C standards.
- Meets rigorous IP21S environmental rating.



*Environmental Chamber*



*Manufacturing and Testing*

**GENERAL OPTIONS**

**DeviceNet Interface Module**

This module provides Networking capabilities for Output Control, Weld Settings, Weld Mode Selection and Data Logging.  
**Order K2206-1**



**Ethernet/DeviceNet Interface Module**

This module provides all DeviceNet functionality as well as networking capabilities for Weld Development, Data Logging, Systems Updates, Diagnostics, Weld Settings and Weld Mode Selection.  
**Order K2207-1**

**Analog Interface Module**

This module provides Analog and Discrete Inputs/Outputs (I/O) for trigger controls plus feedbacks.  
**Contact Lincoln Automation at (216) 383-2667 for information.**



**Wave Designer Software**

This software allows you to program your own waveforms. Custom parameters include peak and background current, frequency, pulse widths and others.  
**Contact Lincoln Application Engineering department for information.**



**Dual Cylinder Platform Undercarriage**

Platform undercarriage for mounting two gas cylinders at rear of welder.  
**Order K1570-1**



**Cool Arc® 40 Water Cooler**

Energy-efficient long life cooler for water-cooled welding applications.  
**Order K1813-1 for 115V**  
**Order K2187-1 for 230V**



**WIRE FEEDER OPTIONS**

**Power Feed 10M Bench & Dual Bench**

Choose the Power Feed 10M Bench Models for automotive manufacturing, shipbuilding, pressure vessels/heavy plate, oil, gas and pipeline construction, particularly where code-quality work is required. The Power Feed 10M Dual Bench has all the features of the Power Feed 10M Bench, plus a second wire reel for twice the productivity.  
**Order K2230-1 Bench**  
**Order K2234-1 Dual Bench**



**WIRE FEEDER OPTIONS CONT.**

**Power Feed 10M Boom & Dual Boom**

Choose the Power Feed 10M Boom Models for boom arm applications in automotive manufacturing, shipbuilding, pressure vessels/heavy plate, oil, gas and pipeline construction, particularly where code-quality work is required. The Power Feed 10M Dual Boom has all the features of the Power Feed 10M Boom, plus a second wire reel for twice the productivity.



**Order K2314-1 Boom**  
**Order K2316-1 Dual Boom**

**Power Feed 10R**

The Power Feed 10R is a high performance, digitally controlled wire feeder designed to be part of a modular, multi-process welding system. It is specifically designed to mount to a robot arm or to use in hard automation applications.



**Order K1780-2**  
**Contact Lincoln Automation at (216) 383-2667 for Power Wave Robotic upgrade.**

**Power Feed 15M**

Designed for field construction, pipelines, offshore and shipyards. The only wire feeder on the market that is both digital and portable. Designed exclusively for use with Power Wave power sources.  
**Order K2196-1**



**STICK OPTIONS**

**Accessory Kit**

For stick welding. Includes 35 ft. (10.7m) 2/0 electrode cable with lug, 30 ft. (9.1m) 2/0 work cable with lugs, headshield, filter plate, work clamp and electrode holder. 400 amp capacity.  
**Order K704**



**TIG OPTIONS**

**PTA-17V TIG Torch (12.5 ft. 2 pc)**

Air-cooled TIG torch, rated 150 amps at 60% duty cycle. Equipped with a valve for gas flow control.  
**Order K1782-7**



**PTA-26V TIG Torch (12.5 ft. 2 pc)**

Air-cooled TIG torch, rated 200 amps at 60% duty cycle. Equipped with a valve for gas flow control.  
**Order K1783-7**

**POWER WAVE 455M & POWER WAVE 455M/STT ORDER FORM**

PRODUCT DESCRIPTION	ORDER NUMBER	QUANTITY	PRICE
POWER WAVE 455M	K2202-1		
POWER WAVE 455M/STT	K2203-1		
POWER WAVE 455M/POWER FEED 10M READY-PAK	K2375-1		
<b>RECOMMENDED GENERAL OPTIONS</b>			
DeviceNet Interface Module	K2206-1		
Ethernet Interface Module	K2207-1		
Analog Interface Module	Contact Lincoln Automation		
Wave Designer Software	Contact Lincoln Application Engineering		
Dual Cylinder Platform Undercarriage	K1570-1		
Cool Arc® 40 Water Cooler - 115V	K1813-1		
Cool Arc® 40 Water Cooler - 230V	K2187-1		
<b>RECOMMENDED WIRE FEEDER OPTIONS</b>			
Power Feed 10M Bench Model	Order K2230-1		
Power Feed 10M Dual Bench Model	Order K2234-1		
Power Feed 10M Boom Model	Order K2314-1		
Power Feed 10M Dual Boom Model	Order K2316-1		
Power Feed 10R	Order K1780-2		
Power Feed 15M	Order K2196-1		
<b>RECOMMENDED STICK OPTIONS</b>			
Accessory Kit	K704		
<b>RECOMMENDED TIG OPTIONS</b>			
PTA-17V TIG Torch (12.5 ft., 2-piece)	K1782-7		
PTA-26V TIG Torch (12.5 ft., 2-piece)	K1783-7		
	<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.



**THE LINCOLN ELECTRIC COMPANY**

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