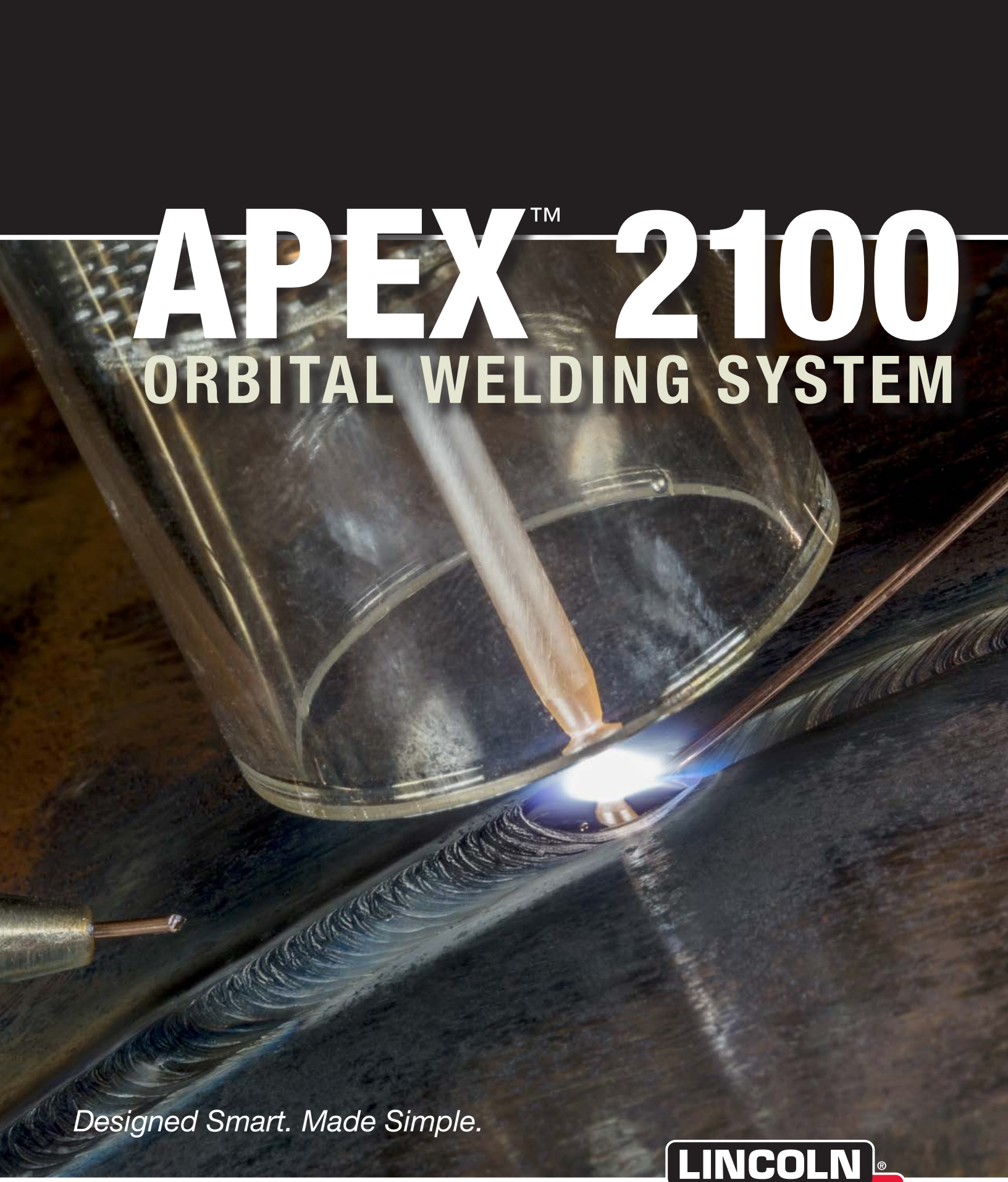
APEX™ 2100

ORBITAL WELDING SYSTEM



Designed Smart. Made Simple.

LINCOLN® ELECTRIC

THE WELDING EXPERTS®

APEX™ 2100 Orbital We

Designed Smart. Made Simple.

lding System

Designed to incorporate new technologies in welding, built to withstand rugged environments, and developed for ease of use and service in the field, the APEX™ 2100 Orbital Welding System is the most advanced orbital TIG system on the market today. The innovative solution was developed to meet application demands in the field and achieve high productivity rates through advanced system performance, and simple serviceability. The designs and technology improvements that make this system superior were inspired by field operators and service personnel experiencing everyday struggles and challenges to perform their job effectively.

With a comprehensive, sleek and modern design, the system is customizable, making it compatible with a variety of applications. It's light weight and portable design allow for quick assembly and job setup, and the intuitive controls make it easy to operate and learn.

Arc Products®, a Lincoln Electric Company, has designed and manufactured automated arc welding equipment for more than 30 years. Lincoln Electric and Arc Products® ensure that each customer receives rapid service support, enhanced quality and system performance carefully matched to their application.

APEX™ 2100
Orbital Welding System

APEX™ 2100 Orbital Welding System

APEX™ 2100 Orbital Welding System is designed and built to tackle the challenges faced by field operators. Based on a modular design, the system components can be easily and quickly replaced or serviced in the field, by operators, reducing downtime. Built to withstand a rugged production environment and harsh environmental factors, the system has a mobile workstation that houses the controller and pendant, power source, and water cooler.

Shown: K52082-1, Orbital Standard System One-Pak® with HELIX™ Track Ring

FEATURES

- **APEX™ 2100 Orbital Controller Unit & Pendant**
  - Easy operation
  - Synchronized data system
  - Ability for service and maintenance in the field
- **HELIX™ T55 Weld Head**
  - No disassembly required to feed wire
  - Easy to setup and adjust
  - Durable head construction
- **Track Ring**
  - Industrial construction
  - Gear-driven tractor system
  - Easy quick clamp mechanism
  - Spring-loaded shoes capacity 800lbs.
- **Power Wave® S500 Power Source**
  - Multi-process Capability: MIG, TIG, Stick, Flux-Cored
  - Exceptional welding performance with high power factor and efficiency
  - Extremely fast arc response
  - Durable Case with an IP23 rating to withstand harsh environments
- **Cool Arc® 55 Water Cooler**
  - Plastic, non-corrosive, 2-gallon reservoir water cooler
  - Operates smoothly, minimizes vibrations
- **Mobile Workstation Cabinet**
  - Heavy-duty, industrial construction
  - Portable workstation

APEX™ 2100

APEX™ 2100 Orbital Controller

APEX™ 2100 Orbital Controller

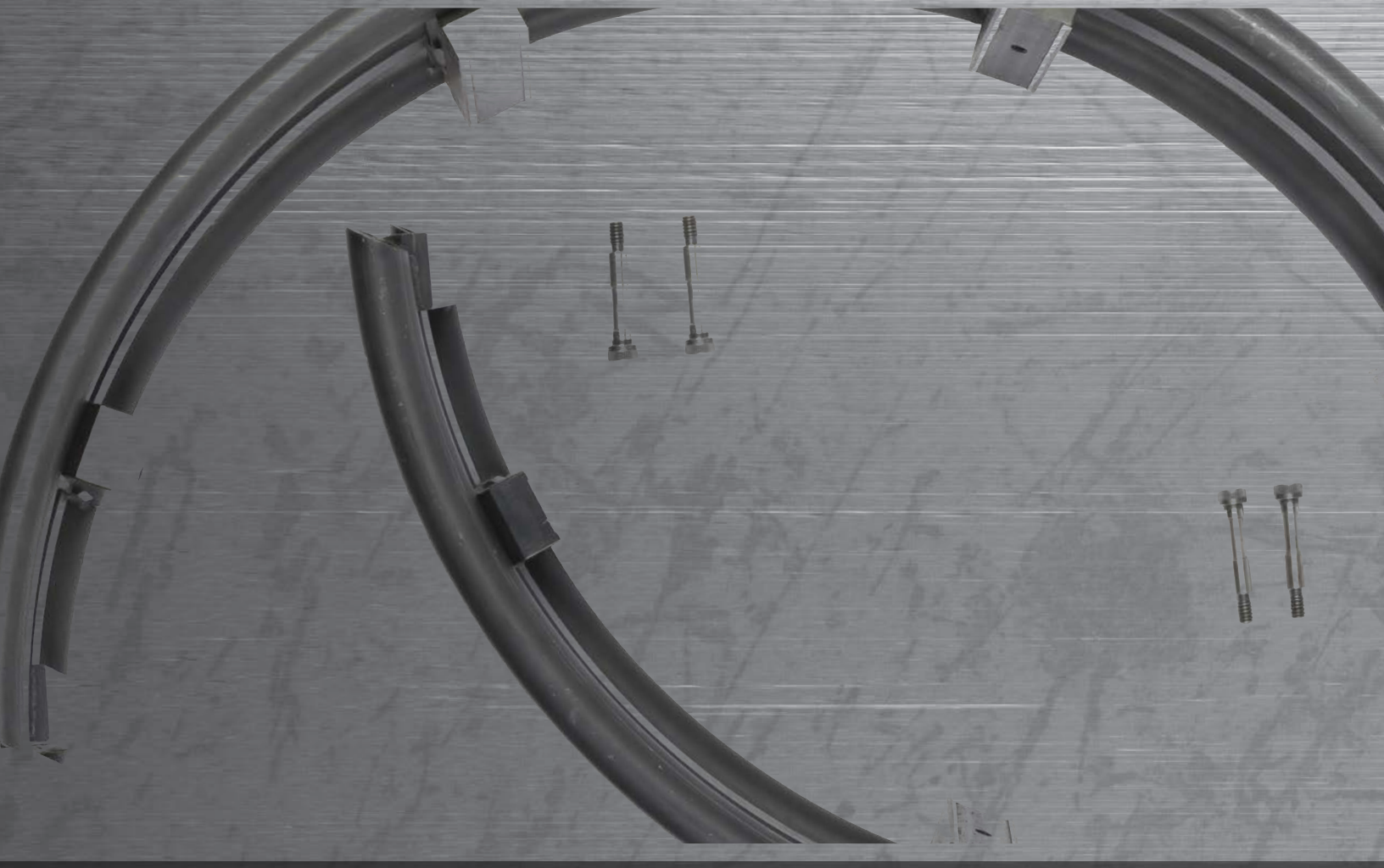
The APEX™ 2100 Orbital Controller is a fully integrated and synchronized system for monitoring mechanical and magnetic oscillation, torch height control (AVC), wire delivery and gas delivery. The lightweight pendant can be held in one hand, allowing the operator immediate access to monitor, adjust and control weld parameters quickly to ensure a reliable and consistent weld. The controller captures all weld information and critical data, which can be stored on the system internally or exported for analytical and statistical reporting.

Shown: K52003-1, APEX™ Orbital Controller System

FEATURES

- **Ease of Operation:**
  - Easy to read, large illuminated LCD screen with clear type.
  - Large button controls for easy operation while wearing protective gloves.
  - Simple and logical navigation is easy for operators to learn
- **Access and replace PC Boards quickly and easily while in the field.**
- **Ergonomic pendant is light weight and balanced for one-handed operation.**
- **Durability:**
  - LCD screen cover protects against scratches and damage.
  - Designed to sustain operator and environmental abuse.
- **Synchronized System:**
  - Real-time capture of welding data.
  - Operator has immediate access to monitor, adjust and control welding parameters throughout the welding process.
  - USB port for quick transfer of data and information from system-to-system or system-to-PC.
  - Weld information and data is stored for future analytical and statistical reporting.

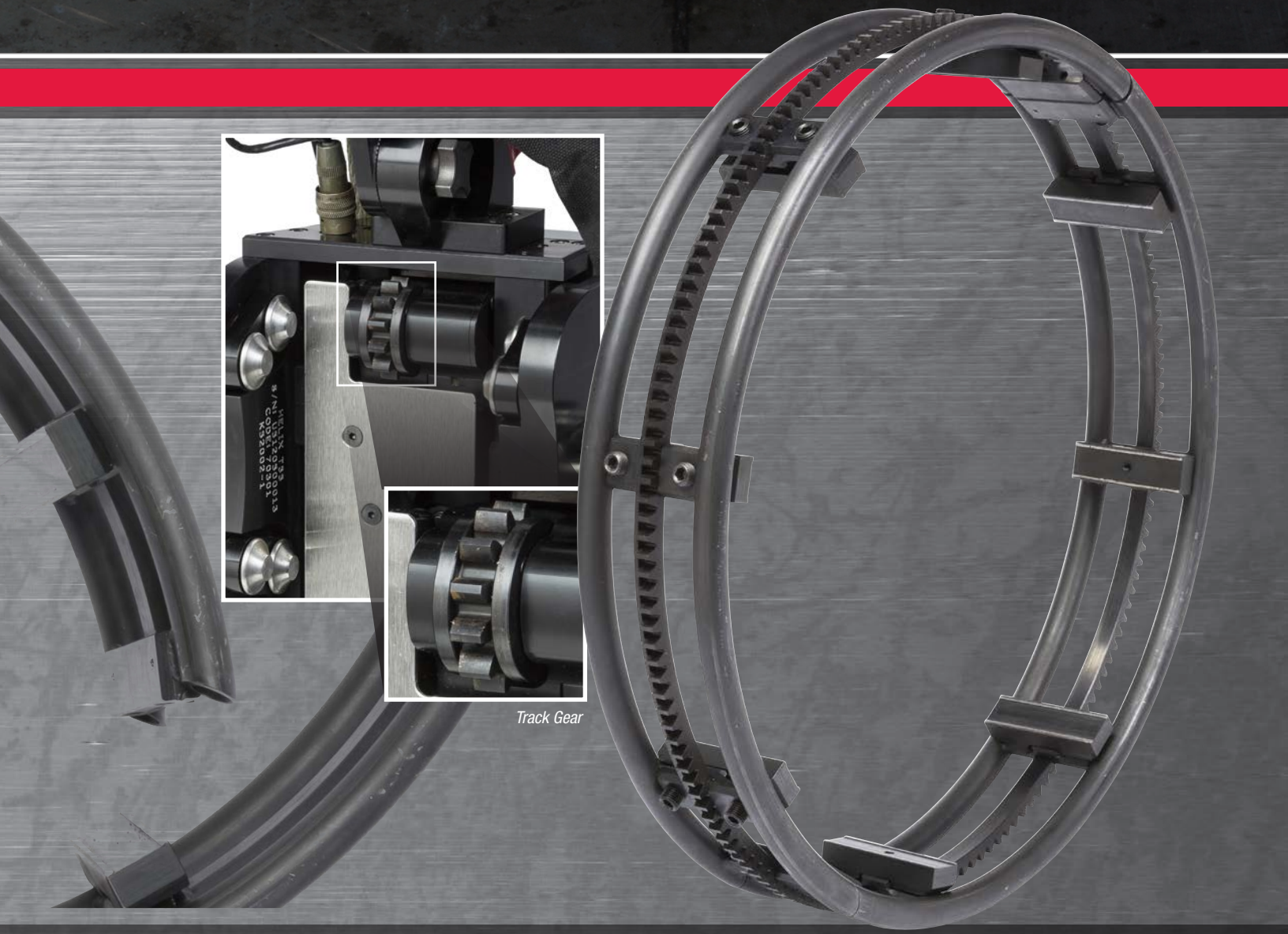
APEX™ 2100
HELIX™ Track Ring



HELIX™ Track Ring

Intuitive track ring design combined with gear-driven, spring-loaded system enables the tractor to drive over debris while maintaining a consistent weld. The track ring and shoe extensions can be used on multiple pipe sizes.

- Track Ring – industrial construction of the rings support the weld head
- Track Gear – eliminates slip or tractor jump
- Spring-loaded Shoe – adjusts for work surface heat expansion



Track Gear

FEATURES

- **Industrial Grade Construction:**
  - Heavy-duty ring construction provides a durable and stable work environment to support the weld head and tractor.
  - Rugged construction ensures durability and ring life performance.

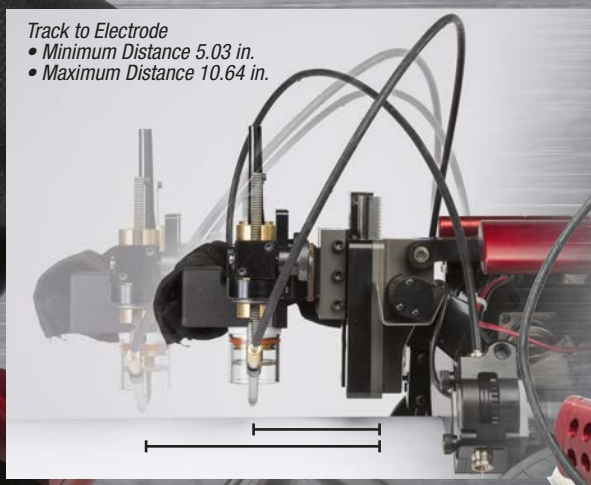
- **Intuitive Track Ring Design:**
  - Gear-driven system provides stable and consistent travel of the tractor to eliminate gear slip.
  - Mounted shoes contain spring loaded cushions rated up to 800 lbs. to allow for work surface heat expansion to eliminate binding and ring distortion.
  - Spring-loaded travel mechanism drives over debris in the gear system to reduce jamming and jerking of the weld head.
  - Join the two halves of the track ring for assembly/ disassembly around the pipe or other work material.

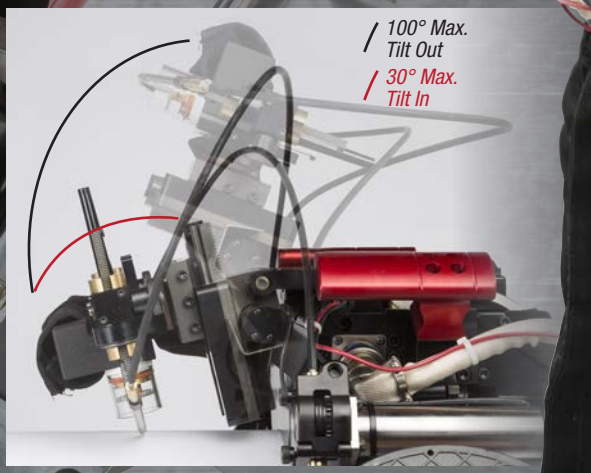
APEX™ 2100
HELIX™ T55 Weld Head

HELIX™ T55 Weld Head

Designed to be lightweight and durable, the HELIX™ T55 is portable and easy to install, operate and service. Its low-profile design allows the HELIX™ T55 to weld in confined spaces. The weld head provides consistent weld speed throughout the welding process and has superior wire feed set-up. One clamp knob secures the tractor to the track ring allowing for quick one person set up and a clutch release disengages the gear from the track allowing the operator to reposition the tractor anywhere on the work surface in seconds.

- Main Body and Torch Arm Assembly
- Front and Rear Wire Arm
- Adjustable to 5.5” radial clearance from the surface of the pipe
- Weld head conforms to any profile: flat, light radius and large radius





FEATURES

- **Tractor-to-Track Design:**
  - Side handles and light weight construction of the weld head allow for easy mounting to the track ring.
  - One quick clamp knob provides precise and secure weld head alignment to the track ring.
  - Quick release travel clutch is easily disengaged for manual adjustment of the weld head to a new position, while keeping the weld head secure on the track ring.
  - Release of the travel clutch allows for system cables to be unwrapped after a weld is complete.
- **Clearance and Oscillation:**
  - Minimum radial clearance from surface pipe is 5.5 inch.
  - Minimum axial clearance is 11.5 inch.
  - 1 inch oscillation stroke, 3.5 inch AVC stroke with extensions and 1.5 inch manual offset additional adjustment.
  - Torch and arc orientation can be adjusted within 180 degrees.
- **Weld head conforms to any profile: flat, tight radius and large radius.**
- **Two wire feeders are standard with the HELIX™ T55.**
- **No disassembly is required to feed the wire through the HELIX™ T55.**

APEX™ 2100
Technical Specifications

APEX™ 2100 Orbital Controller

SPECIFICATIONS

Part Number	Description
K52082-1	Orbital Standard System One-Pak® (APEX™ Orbital Controller System and HELIX™ T55 [HELIX™ track ring is not included - select track ring size to complete system])
K52003-1	APEX™ Orbital Controller System (Control, Pendant, Cabinet, Power Wave® S500, Cool Arc® 55 and cables. Weld head not included.)
K52073-1	APEX™ 2100 Controller
K52074-1	APEX™ 2100 Pendant
K52075-1	APEX™ Cabinet

Part Number	Description
K52076-25	APEX™ 2100 Pendant Cable, 25 ft (7.6 m)
K52076-50	APEX™ 2100 Pendant Cable, 50 ft (15.2 m)
K52076-75	APEX™ 2100 Pendant Cable, 75 ft (23 m)
K52076-100	APEX™ 2100 Pendant Cable, 100 ft (30.5 m)
K3170-1	Power Wave® S500
K3086-1	Cool Arc® 55

SPECIFICATIONS - SEE PAGE 14 FOR TRACK RING SELECTION

Product Name	Product Number	Input Power	Rated Output	Input Current	Dimensions H X W x D - in (mm)	Net Weight lbs (kg)
APEX™ 2100 Controller	K52073-1	115/1/50/60	N/A	50/60 Hz: 5A @115 volts	34.5 x 9.5 x 26.25 (876.3 x 241.3 x 668)	78 (35.4)
APEX™ 2100 Pendant	K52074-1	24V	N/A	1A	11.5 x 8 x 3.75 (292.1 x 203.2 x 96.5)	6 (2.7) (with cable)
APEX™ Cabinet	K52075-1	N/A	N/A	N/A	49x 27.5 x 29 (1244 x 699 x 736.6)	175 (79.4)

APEX™ 2100 Controller (K52073-1)

APEX™ 2100 Pendant (K52074-1)

APEX™ Cabinet (K52075-1)

NOTE: Equipment not to scale.

Power Wave® S500 and Cool Arc® 55

Powerful Multi-Process Capability.

The multi-process Power Wave® S500 is packed with Lincoln Electric performance technology for welding on thicker materials. It provides an extremely fast arc response, includes over 65 standard welding waveforms for optimized performance on almost any application and efficiently converts input power to reduce operational costs.

FEATURES

- **PowerConnect™ Technology (Patent-Pending)** – Automatically adjusts to input power from 200-600V, 50 or 60 Hz, three phase. Welding output remains constant through the entire input voltage range.
- **Tribrid™ Power Module** – Exceptional welding performance with high power factor and efficiency.
- **CheckPoint™** – A cloud-based system to view or analyze your welding data. Track equipment usage, store weld data, configure fault limits and more.
- **Standard 115V (10A) AC Duplex Auxiliary Power Receptacle** – Features patent-pending Surge Blocker™ Technology to ensure simultaneous welding performance is not compromised by high starting current devices such as grinders (typically requiring 60A or more peak surge current).
- **Durable Case** - IP23 rated to withstand harsh environments.
- **Standard Ethernet** - Allows for effortless software upgrades through powerwavesoftware.com

SPECIFICATIONS

Product Name	Product Number	Input Voltage	Input Current @ Rated Output	Rated Output Current/Voltage/Duty Cycle	Output Range	H x W x D inches (mm)	Net Weight lbs. (kg)
Power Wave® S500	K2904-1	200/208/220/230/380/ 400/415/460/575/ 3/50/60	3 Ph / 40% Duty Cycle: 80/73/41/37/29 3 Ph / 100% Duty Cycle: 60/54/30/27/21	GTAW-DC: 550A/32V/40% GTAW-DC: 450A/28V/100%	5-550A	22.5 x 14 x 24.8 (571 x 355 x 630)	150 (68)

Cool Arc® 55 Water Cooler

Designed to integrate directly with the Power Wave® S-Series power sources, the Cool Arc® 55 is a rugged, reliable water cooler capable of cooling torches rated up to 500 amps. It is recommended for robotic and hand-held MIG, TIG and plasma cutting applications.

SPECIFICATIONS

Product Name	Product Number	Input Power	Rated Output	Input Current	Dimensions H X W x D - in (mm)	Net Weight lbs (kg)
Cool Arc® 55	K3086-1	115/1/60	N/A	60HZ: 3.8A @ 115 volts	25.4 x 13.9 x 11.5 (645.2 x 353 x 292.1)	Empty: 62.6 (28.5) Full: 77.3 (35.1)

APEX™ 2100
Technical Specifications

HELIX™ T55 Weld Head

SPECIFICATIONS

Part Number	Description
K52002-1	HELIX™ T55 Tractor w/accessories
K52061-1	HELIX™ Tool Box includes welding consumables
KP52062-1	Pyrex Cup (short)
KP52066-1	1/8 Tungsten
KP52071-1	5/32 Tungsten
KP52063-1	1/8 Tungsten Adaptor
KP52069-1	5/32 Tungsten Adaptor
KP52064-1	Collet Body
KP52065-1	1/8 Collet
KP52070-1	5/32 Collet
KP52067-1	Back Cap Long
KP52068-1	Back Cap Medium

Part Number	Description
KP52077-1	HELIX™ T55 Wire Liner Standard Length
KP52077-2	HELIX™ T55 Wire Liner Extended Length
KP52078-035	HELIX™ T55 Guide 0.035 (0.9 mm)
KP52078-045	HELIX™ T55 Guide 0.045 (1.1 mm)
KP52079-035	HELIX™ T55 Drive Rolls 0.035 (0.9 mm)
KP52079-045	HELIX™ T55 Drive Rolls 0.045 (1.1 mm)
KP52080-035	HELIX™ T55 Inlet/Outlet Guide 0.035 (0.9 mm)
KP52080-045	HELIX™ T55 Inlet/Outlet Guide 0.045 (1.1 mm)
K52072-25	HELIX™ T55 Cable/Hose Extension 25 ft (7.6 m)
K52072-50	HELIX™ T55 Cable/Hose Extension 50 ft (15.2 m)
K52072-75	HELIX™ T55 Cable/Hose Extension 75 ft (23 m)

SPECIFICATIONS

Product Name	Product Number	Input Power	Travel Speed	Wire Feed Speed	Wire Size Range	Radial Clearance
HELIX™ T55 Weld Head	K52002-1	25V DC	1 - 20 ipm	0.1 to 130	0.030 - 0.052 in (0.8 - 1.3 mm)	5.5 in (139.7 mm)
	Axial Clearance	**Oscillation Stroke**	**Arc Voltage Control (AVC) Stroke**	**Net Weight**	**Track to Rear**	**Track to Electrode (Min - Max)**
	11.5 in (292.1 mm)	1 in (25.4 mm)	3.5 in (88.9 mm)	57 lb (25.9 kg)	3.41 in (86.6 mm)	• Minimum: 5.03 in (128 mm) • Maximum: 10.64 in (270.3 mm) with standard 6 in (152.4 mm) OSC plate [16.14 in (410 mm) maximum with optional 12 in (305 mm) OSC plate]
	Electrode to Front	**Lead/Lag**	**Torch tilt in**	**Torch tilt out**	**Track Width**	**Manual Torch Height Adjustment**
	1.93 in (49 mm)	360°	30° maximum	110° maximum	3.90 in (99.1 mm)	±0.9 in (23 mm)

HELIX™ Track Ring

SPECIFICATIONS

Part Number	Product Name	Description
K52000-8	HELIX™ Track Ring - 8 in	8 in (203.2 mm)Track Ring (two pieces, 6 shoes)
K52000-10	HELIX™ Track Ring - 10 in	10 in (254 mm) Track Ring (two pieces, 6 shoes)
K52000-12	HELIX™ Track Ring - 12 in	12 in (304.8 mm) Track Ring (two pieces, 6 shoes)
K52000-14	HELIX™ Track Ring - 14 in	14 in (355.6 mm) Track Ring (two pieces, 6 shoes)
K52000-16	HELIX™ Track Ring - 16 in	16 in (406.4 mm) Track Ring (two pieces, 6 shoes)
K52000-18	HELIX™ Track Ring - 18 in	18 in (457.2 mm) Track Ring (two pieces, 6 shoes)
K52000-20	HELIX™ Track Ring - 20 in	20 in (508 mm) Track Ring (two pieces, 6 shoes)
K52000-22	HELIX™ Track Ring - 22 in	22 in (558.8 mm) Track Ring (two pieces, 6 shoes)
K52000-24	HELIX™ Track Ring - 24 in	24 in (609.6 mm) Track Ring (two pieces, 8 shoes)
K52000-28	HELIX™ Track Ring - 28 in	28 in (711.2 mm) Track Ring (two pieces, 8 shoes)

Part Number	Product Name	Description
K52000-32	HELIX™ Track Ring - 32 in	32 in (812.8 mm) Track Ring (two pieces, 8 shoes)
K52000-36	HELIX™ Track Ring - 36 in	36 in (914.4 mm) Track Ring (four pieces, 12 shoes)
K52000-40	HELIX™ Track Ring - 40 in	40 in (1016 mm) Track Ring (four pieces, 12 shoes)
K52000-44	HELIX™ Track Ring - 44 in	44 in (1117.6 mm) Track Ring (four pieces, 12 shoes)
K52000-48	HELIX™ Track Ring - 48 in	48 in (1219.2 mm) Track Ring (four pieces, 12 shoes)
K52000-52	HELIX™ Track Ring - 52 in	52 in (1320.8 mm) Track Ring (four pieces, 12 shoes)
K52000-56	HELIX™ Track Ring - 56 in	56 in (1422.4 mm) Track Ring (four pieces, 12 shoes)
K52000-60	HELIX™ Track Ring - 60 in	60 in (1524 mm) Track Ring (four pieces, 12 shoes)
K52000-64	HELIX™ Track Ring - 64 in	64 in (1625.6 mm) Track Ring (four pieces, 12 shoes)

SHOE EXTENSIONS

Part Number	Description
K52060-05	Shoe Extension 0.5 in (13 mm)
K52060-10	Shoe Extension 1.0 in (25.4 mm)
K52060-20	Shoe Extension 2.0 in (50.8 mm)
K52060-30	Shoe Extension 3.0 in (76.2 mm)
KP52081-1	Single Replacement Shoe

APEX™ 2100
Orbital Welding System

Designed Smart. Made Simple.

Lincoln Electric's APEX™ 2100 Orbital Welding System is a modular system incorporating all the integrated welding supplies required for orbital TIG welding. Engineered for diverse applications in demanding environments, the welding system is easy to operate, maintain and service. Components of the system can easily and quickly be replaced or serviced in the field, by operators, reducing downtime.

Benefits of the APEX™ 2100 Orbital Welding System

- Increase productivity by reducing time consumed on complicated on-site jobs.
- Consistent and repeatable weld quality.
- Operate in harsh environmental conditions, confined or restricted spaces, and locations with lack of visibility.
- Retrieve weld programs and parameters for maintaining quality control procedures for system set up.
- Recover weld information and data for future analytical and statistical reporting.

Applications:

Nuclear Energy, Thermal Energy, Petroleum Processing and Aerospace

Quality and Reliability

Equipment destined for harsh environments is often tested to IP21, IP23 and IP23S standards. Products intended for the Canadian market meet stringent CSA (Canadian Standards Association) standards. Electrode is tested to comply with AWS (American Welding Society) and often ASME Boiler Pressure codes, ABS (American Bureau of Shipping), CWB/CSA (Canadian Welding Bureau) and MIL qualifications. Certificates of Conformance are available at our web site.

- All Lincoln Electric inverter power sources are fully tested for reliability before and after assembly.
- Each machine undergoes a functional weld test to ensure performance.
- Lincoln Electric 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.
- Standards – IEC EN 60974-1, NEMA EW 1, CSA NRTL/C.
- Environmental IP21S rating.

3 YEAR WARRANTY

You have the right to expect that the welding and cutting equipment, electrode and flux you purchase will be free of defects in workmanship and material. Standing behind the high quality of our products, Lincoln Electric's warranty commitment to its customers leads the industry in breadth and scope. All industrial welders and power sources carry a 3 Year Lincoln warranty. Electrode, wire and flux are warranted for 1 full year.

EXTENDED WARRANTY AVAILABLE

If you choose, you can extend the duration of the Lincoln Electric warranty on your Lincoln Electric welder or power source by two years with the Lincoln Electric Extended Warranty. Available only in the United States and Canada. Visit our web site for more information.

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 information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

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

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.

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LINCOLN® ELECTRIC

The Performance You Need.
The Quality You Expect.℠