

# RANGER® 305 D

Diesel Power, Expanded Capabilities



Shown:  
K1727-4

## KEY FEATURES

Choose the Ranger® 305 D for extended fuel efficiency and compatibility with diesel-powered fleets. The 305 D is equipped with a 10,000-watt single-phase AC generator that powers motor starting, tools and inverter welders for extended range and process capability. Meets all EPA Tier 4 requirements.

- Digital weld meters to monitor actual welding output
- Arc force control for a soft or more forceful digging arc
- Built-in “hot” start for easier starts and restrikes

### Processes »

Stick, TIG, MIG, Flux-Cored

### Output »



### Input »




### Product Number »

K1727-4 Base Unit  
K1727-4-RP3 Ready-Pak® 3

**WELDING TECHNOLOGY**  
SUPPLIERS OF WELDING AND ENGINEERING EQUIPMENT



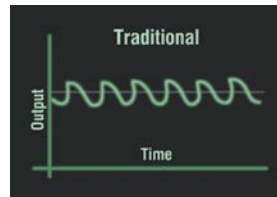
## FEATURES

- » **Multi-Process Welding**
  - Excellent DC multi-process welding for general purpose stick, downhill pipe (stick), TIG, cored-wire and MIG (CO<sub>2</sub> and mixed gas).
  - Rated at 29V for 300 amps of stick or CV wire welding.
  - CV wire welding with up to 5/64 in. (2.0 mm) diameter electrodes.
- » **Digital Weld Meters**
  - Digital weld meters for amps and volts makes it easy to precisely pre-set your procedures and monitor actual welding output.
- » **Superior Arc Performance**
  - Lincoln Electric  Chopper Technology® – provides easy starts, a smooth arc, low spatter and excellent bead appearance.
- » **10,000 Watts Peak Single-Phase AC Generator Power**
  - 10,000 watts peak for motor starting.
  - 9,500 watts continuous for high capacity needs such as a back-up generator, powering a Lincoln Electric Invertec® inverter welder. Also use for lights, a grinder or other power tools.
  - AC generator voltage is constant at 120V or 240V at any weld dial setting.
- » **Skewed Rotor Design**
  - Skewed rotor design provides AC power suitable for operating Lincoln Electric inverter power sources.
- » **Rugged Reliability**
  - Welding and AC Generator Outputs rated at 104°F (40°C).
- » **18.8 HP Kubota® Diesel Engine**
  - Water-cooled for low noise.

## PERFORMANCE


### Welding Performance


#### WHAT IS CHOPPER TECHNOLOGY®?



Traditional weld control is more variable around the desired output.



 Chopper Technology delivers extremely fast response for tighter output control.

Patented and award-winning Lincoln Electric  Chopper Technology delivers superior DC arc welding performance for general purpose stick, downhill pipe, DC TIG, MIG and cored-wire.

Benefits of Chopper Technology include:

- Easy arc starting
  - Smooth arc action
  - Low spatter levels
  - Excellent bead appearance
- CC-stick mode is optimized for general purpose stick using E7018 low hydrogen electrode.
  - Downhill pipe welding mode excellent for cellulosic electrodes, such as Fleetweld® 5P+. Fast travel speeds, especially on fill passes. Arc control adjustment for a softer, buttery arc, or a more forceful, digging arc.
  - Arc force control provides a soft or more forceful digging arc in CC-stick or downhill pipe mode and inductance/pinch control in CV wire mode.
  - Built-in "hot" start for easier starts and restrikes minimizing the electrode "sticking" to the work.
  - DC Touch Start TIG® – lift tungsten to start the arc.

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## PERFORMANCE

### WHAT IS TOUCH START TIG®?

Touch Start TIG® uses a very low voltage to sense when the tip of the tungsten electrode is touched to the work piece. When this occurs, a complete circuit is established. When the tungsten is then raised from the work piece, the circuit senses a change in voltage and initiates the appropriate welding current and voltage to support the TIG welding process.

Enjoy the added benefits of Lincoln Electric's Touch Start TIG® when DC TIG welding. Not only do you avoid tungsten contamination when arc starting, but you also don't need extra high frequency equipment. Voltage sensing output stops the arc when the torch is lifted at the end of the weld – increased operator appeal.

### AC Generator Performance

- 10,000 watts peak AC generator power. Use for motor starting.
- Up to 40 amps at 240V from the 120V/240V receptacle with weather resistant cover. Circuit breaker protection.
- Two 120V 20 Amp GFCI (Ground Fault Circuit Interruptor) duplex receptacles with weather resistant covers. Circuit breaker protection. Will operate up to 9 in. grinder.
- Nominal 120V and 240V AC generator voltage is independent of any weld dial setting. This is done with one generator system (rotor/stator) using Lincoln Electric  Chopper Technology, avoiding the complexity of two generator (rotor/stator) systems.

Welding Output (Amps)	Continuous Power (Watts)
300	0
250	2,300
200	4,200
150	5,600
100	7,100
0	9,500

## FEATURES

- Simple Controls - Keep training time to a minimum with the straightforward control panel of the Ranger 305 D. The flip-down control panel door keeps less frequently used controls out of the way.
- Single, full-range output control dial. No confusion with taps and controls!
- 4 welding modes: CC-Stick, Downhill Pipe, CV-Wire, and DC Touch Start TIG.
- Dual digital output meters for presetting weld amps for stick, TIG or downhill pipe modes, or voltage for CV wire mode. Also displays actual outputs while welding. Memory feature holds output readings for 7 seconds after welding stops for viewing by the operator.
- Output at welding terminals controlled by electronic contactor. Can be switched to "On", or to "Remotely Controlled".
- Remote is auto-activated when plugged into a 6-pin connector. For the CC-stick, downhill pipe and Touch Start TIG® modes, the machine output dial becomes a maximum current limit for more fine tuning with the remote control dial or Amptrol™.
- Compatible with many Lincoln wire feeders and Magnum® SG Spool Gun.
- Wire feed voltmeter switch matches polarity of wire feeder voltmeter to polarity of electrode.
- Top-of-the-line water-cooled Kubota® 18.8 HP D722 diesel engine with electric start. EPA Tier 4 Final.
- Fully enclosed case for equipment protection and low noise. Noise at rated load:
  - 104.2 dB sound power (L<sub>wa</sub>)
  - 80.6 dBA sound level at 23 ft. (7 m)
- Glow plugs for rapid starting down to 5°F (-15°C).
- Mechanical fuel pump is activated when glow plug button is pressed.

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## FEATURES, CONT'D.

- Engine closed breather system keeps engine compartment clean! Eliminates oil mist from collecting inside engine compartment, specifically on radiator surfaces, which would lower engine cooling efficiency. Also prevents oil drips to a truck bed or the ground from an open breather discharge.
- 12 gallon fuel capacity allows you to run an extended day.
- Electric fuel gauge located on control panel makes it easy to check the fuel level during operation. Helps you eliminate running low on fuel during critical jobs.

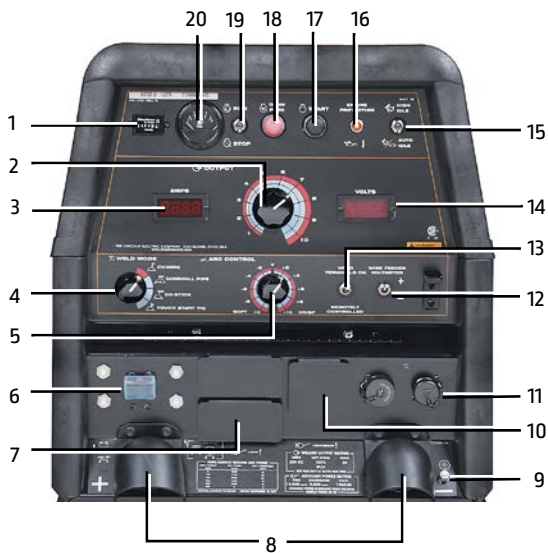


- Large top fuel filler neck is easily accessed for refueling.



- Oil drain valve (no tools required) with removable extension tube.
- Convenient truck or trailer mounting with front and rear holes in base.

## KEY CONTROLS



1. Hour Meter
2. Output Control Dial
3. Digital Weld Output Ammeter
4. Weld Mode Switch
5. Arc Force & Inductance/ Pinch Control
6. Circuit Breakers
7. 120 Volt AC GFCI Receptacles (NEMA 5-20R)
8. Output Stud Covers
9. Ground Stud
10. 120/240 Volt AC Full KVA Receptacle (NEMA 14-50R)
11. Remote Control & Feeder Connectors
12. Wire Feeder Voltmeter Polarity Switch
13. Output Contactor Control Switch
14. Digital Weld Output Voltmeter
15. Idler Control Switch
16. Engine Protection Light
17. Pushbutton Start Switch
18. Glow Plug Button
19. Run/Stop Switch
20. Electric Fuel Gauge

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## QUALITY AND RELIABILITY

- Printed circuit boards are environmentally-shielded using Lincoln Electric engineered potting and protective frame trays.
- Oil dip stick, filters, spark plugs, etc. are easily accessed with left, right and top engine doors. Left and right doors are removable.
- Adjust exhaust direction with top-mounted 360° rotatable exhaust muffler. Muffler made from aluminized steel for long life.
- Attractive red and black powder paint finish offers increased durability with added protection from rust and corrosion.
- Longer engine life, reduced noise emissions and greater fuel economy with automatic engine idler.
- Conveniently located engine maintenance label under top engine door.
- Engine hour meter for scheduled maintenance.
- Circuit breaker protection on the battery ignition system provides added component protection.
- Reliable start-up with Group 58 battery with 550 cold cranking amps.
- Automatic engine shutdown protection for low oil pressure or high engine temperature. Indicator light on control panel.
- Dependability and long life aided by all-copper windings in rotor and stator with high quality insulation.
- Canadian Standards Association (CSA) certified.
- Manufactured under a quality system certified to ISO 9001 requirements and ISO 14001 environmental standards.
- Three-year Lincoln Electric warranty (engine is warranted separately by the manufacturer - see Engine Specifications, footnote 6).



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

## MACHINE SPECIFICATIONS

Product Name	Ordering Information	Description	CC/Pipe Rated Output <sup>(1)</sup> Current/Voltage/ Duty Cycle	CV-Rated Output Current/Voltage/ Duty Cycle	Generator AC Power <sup>(3)(4)</sup>	Dimensions H x W x L inches (mm)	Weight lbs. (kg)
Ranger 305 D (Kubota)	K1727-4	300 Amp DC Multi-Process Arc Welder with Lincoln Electric  Chopper Technology  10,000 Watts Peak  9,500 Watts Continuous AC Power	DC Constant Current 305A/29V/100% 20-305A  DC Pipe Current 300A/29V/100% 40-300A  Touch Start TIG 250A/30V/100% 20-250 A  Single Dial Continuous Control 60V DC Max OCV @ 3650 RPM	DC Constant Voltage <sup>(2)</sup> 300A/29V/100%  14-29 V Single-Dial Continuous Control  Wire Feeder Power 42V, 60 Hz, 15 Amps 120V, 60 Hz, 20 Amps	10,000 Watts Peak 9,500 Watts Continuous 60 Hz Single Phase  Full KVA <u>Receptacle</u> 40A@ 240V 40A@ 120V ea. Branch Circuit <sup>(5)</sup>  Four 120V GFCI <u>Receptacles</u> 20A per Duplex 40A Total <sup>(5)</sup>	29.9 x 21.5 x 52.3 in (759 x 546 x 1327 mm)  To top of exhaust tube: 35.8 in. (909 mm)	698 (317)

<sup>(1)</sup> High Altitude: For maximum rating, derate the output 2.5% to 3.5% for every 1,000 ft. (300 m). High Temperature: For maximum rating, derate 2 volts for every 18°F (10°C) above 104°F (40°C). See Operator Manual for additional information.

<sup>(2)</sup> DC constant voltage capability provides convenience and added safety when welding in electrically hazardous conditions.

<sup>(3)</sup> When welding, available auxiliary power will be reduced. Output voltage is within  $\pm 10\%$  at all loads up to rated capacity.

<sup>(4)</sup> 120V will operate either 60 Hz or 50/60 Hz power tools, lights, etc.

<sup>(5)</sup> Circuits cannot be wired in parallel to operate the same device.

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## ENGINE SPECIFICATIONS

Engine Model	Description	Horsepower & Displacement	Ignition	Capacities	Operating Speeds	Fuel Consumption
Kubota D722 Diesel <sup>(6)</sup> EPA Tier 4 Final	3 Cylinder, 4 Cycle, Water-Cooled Diesel Engine Electric Fuel Pump Auto Air-Bleed System	18.8 HP @ 3600 RPM 43.9 cu in (789 cc)	Electric Start, 12V Group 58 Battery, 550 Cold Cranking Amps, Pushbutton Start Switch, Charging Indicator	FUEL: 12 Gals (45 Ltrs)	FULL LOAD 3,500 RPM (300A)	1.2 Gals/Hr 4.5 Ltr/Hr.
				OIL: 3.4 Qts (3.2 Ltrs)	HIGH IDLE 3,650 RPM	0.5 Gals/Hr 2.1 Ltr/Hr
				COOLANT: 3.9 Qts (3.6 Ltrs)	LOW IDLE 2,450 RPM	0.3 Gals/Hr 1.1 Ltr/Hr

<sup>(6)</sup> Engine warranted separately by engine manufacturer.

## SYSTEM SELECTION

### Ready-Pak 3 Welding Package

Order the fully assembled trailer package for the Ranger 305D from the factory. The heavy-duty trailer provides extra mobility for road, off-road, and yard use.

#### What's include:

- Ranger 305D (K1727-4)
- Small Welder Trailer with Ball/Lunette Eye Hitch Included (K2635-1)
- Fender and Light Kit (K2639-1)
- Cable Rack (K2640-1)



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120V



**GENERAL OPTIONS**

**Power Plug Kit**

Provides four 120V plugs rated at 20 amps each, and one dual voltage, full KVA plug rated at 120/240V, 50 amps. 120V plug may not be compatible with common household receptacles.  
Order K802N



**Full-KVA Power Plug**

One dual voltage plug rated at 120/240V, 50 amps. NEMA 14-50P.  
Order T12153-9



**Full-KVA Adapter Kit**

Provides convenient connection of Lincoln Electric equipment with NEMA 6-50P plug to Lincoln Electric engine-driven welders having a Full-KVA receptacle.  
Order K1816-1



**Spark Arrester Kit**

Attaches to muffler exhaust tube. Virtually eliminates spark emissions.  
Order K1898-1



Shown with optional K2639-1 Fender & Light Kit

**Small Two Wheel Welder Trailer**

For heavy-duty road, off-road, plant and yard use. Includes pivoting jack stand, safety chains, and 13 in. (330 mm) wheels. Stiff .120 in. (3.0 mm) welded rectangular steel tube frame construction is phosphate etched and powder coat painted for superior rust and corrosion resistance. Low sway suspension gives outstanding stability with manageable tongue weight. Wheel bearings are packed with high viscosity, high pressure, low washout Lubriplate® grease. Includes a Duo-Hitch®, a 2 in. (51 mm) ball/lunette eye combination hitch. Overall width 60 in. (1524 mm). Overall length 110 in. (2794 mm).  
Order K2635-1 Trailer  
K2639-1 Fender & Light Kit  
K2640-1 Cable Rack



**Polarity/Multi-Process Switch**

For easy polarity switching. Example: DC-stick root pass on pipe & DC+ stick for hot, fill and cap passes. Also for an easy process change. Example: DC+ stick root pass on pipe & DC- Innershield® self-shielded flux-cored wire for hot, fill and cap passes. 6 & 14-pin remote connections can be made to this unit. For all Lincoln Electric Chopper Technology engine-driven welders. Mounts on roof with K2663-1 Docking Kit.  
Order K2642-1



**Docking Kit**

Secures the K2642-1 Polarity/Multi-Process Switch to the engine-driven welder roof. Release latch permits removal of K2642-1 Polarity/Multi-Process Switch. Made from stainless steel for rust-free operation. For all Lincoln Electric Chopper Technology® engine-driven welders.  
Order K2663-1



**STICK OPTIONS**

**Accessory Kit**

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



**Accessory Kit**

For stick welding. Includes 20 ft. (6.1 m) #6 electrode cable with lug, 15 ft. (4.6 m) #6 work cable with lugs, headshield, filter plate, work clamp, electrode holder and sample pack of mild steel electrode. 150 amp capacity.  
Order K875



**Remote Control Kit**

Consists of a control box with choice of two cable lengths. Permits remote adjustment of output.  
Order K857 for 25 ft. (7.6 m)  
K857-1 for 100 ft. (30.5 m)



**TIG OPTIONS**

**Pro-Torch™ PTA-26V TIG Torch**  
Air-cooled 200 amp torch equipped with valve for gas flow control. 25 ft. (7.6 m) length.  
Order K1783-9



**Foot Ampctrl™**

Varies current while welding for making critical TIG welds and crater filling. Depress pedal to increase current. Depressing pedal fully achieves maximum set current. Fully raising the pedal finishes the weld and starts the afterflow cycle. Includes 25 ft. (7.6 m) control cable.  
Order K870



**Hand Ampctrl™**

Provides 25 ft. (7.6 m) of remote current control for TIG welding. (6-pin plug connection). Velcro straps secure torch.  
Order K963-3 [one size fits all Pro-Torch™ TIG torches].



**Magnum® Parts Kit for PTA-26V TIG Torch**

Provides all the torch accessories you need to start welding. Parts kit provides collets, collet bodies, a back cap, alumina nozzles and tungstens in a variety of sizes, all packaged in an easy to carry reclosable pack.  
Order KP509



**Square Wave TIG 200**

This 46 lb (21 kg) TIG and stick welder includes adjustable AC Frequency Control and AC Balance for great results on aluminum, pulse mode and 120V or 230V input power capability.  
Order K5126-1



**WIRE FEEDERS**

**LN-25 Ironworker Wire Feeder**

Portable CV unit for flux-cored and MIG welding with MAXTRAC® wire drive system. Includes digital meters for wire feed speed/ amperage and voltage, gas solenoid, internal contactor and 5/64 in. (2.0 mm) drive roll kit for cored wire. Has 83% reduced wire feed speed capability for 6 o'clock pipe welding with Innershield® wire.  
Order K2614-9



**Drive Roll and Guide Tube Kit**

For .068-.072 in. (1.7-1.8 mm) cored or solid steel wire.  
Order KP1697-068



**K126™ PRO Innershield® Gun**

For self-shielded wire with 15 ft. (4.5 m) cable. For .062-5/64 in. (1.6-2.0 mm) wire. Includes K466-10 Connector Kit.  
Order K126-12

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## RECOMMENDED ACCESSORIES

### WIRE FEEDERS, CONT'D.



**Magnum PRO 350 Ready-Pak® 15 ft. .035-5/64 in.**  
Magnum PRO MIG/flux-cored welding guns are rated 100% duty cycle. The guns are designed for high amperage, high duty cycle applications in extreme environments where heat-resistance and fast serviceability are key.  
**Order K2652-2-10-45**



**Input Cable**  
(For SG Control Module)  
For Lincoln Electric engine power sources with 14-pin MS-type connection, separate 115V NEMA receptacles and output stud connections.  
**Order K691-10**



**PLASMA CUTTING**  
**Tomahawk® 1000**  
Cuts metal using the AC generator power from the engine-driven welder. Requires the T12153-9 Full-KVA Power Plug [1-Phase].  
**Order K2808-1**



**Drive Roll and Guide Tube Kit**  
For .035-.045 in. (0.9-1.1 mm) solid steel wire.  
**Order KP1696-1**



**POWER MIG® 180C**  
Premium compact wire welder with continuous voltage control for MIG and flux-cored welding. 30 to 180 amp output range. Get input power from the AC generator of the engine-driven welder with the K1816-1 Full-KVA Adapter Kit (required). Add the K2532-1 Magnum 100SG Spool Gun for aluminum MIG welding.  
**Order K2473-2**



**Magnum SG Spool Gun**  
Hand held semiautomatic wire feeder. Requires SG Control Module  
**Order K487-25**



**SG Control Module**  
The interface between the power source and the spool gun. Provides control of wire speed and gas flow. For use with a spool gun.  
**Order K488**



**Magnum 100SG Spool Gun**  
Designed to easily feed 4 in. (102 mm) diameter 1 lb. (0.45 kg) spools of .030 in. (0.8 mm) or .035 in. (0.9 mm) diameter SuperGlaze® aluminum MIG wire. Includes gun, adapter kit, .035 in. (0.9 mm) contact tips (qty. 3), gas nozzle, and a 1 lb. (0.45 kg) spool of SuperGlaze 4043 .035 in. (0.9 mm) MIG wire. Packaged in a convenient carrying case.  
**Order K3269-1**

## PRODUCT SPECIFICATIONS

Product Name	Product Number	Rated Output Current/Voltage/Duty Cycle	Output Range	Engine	Number of Cylinders	HP & Speed (rpm)	H x W x D in (mm)	Net Weight lb (kg)
Ranger 305 D	K1727-4	305A DC CC/29V/100% 300A DC CV/29V/100%	20-305A DC 40-300A Pipe 20-250A DC TIG 14-29V CV 10,000 Watts Peak 9,500 Watts Continuous	Kubota D722 Diesel EPA Tier 4 Final	3	18.8 @ 3600	29.9 x 21.5 x 52.3 (759 x 546 x 1327) To top of exhaust tube: 35.8 (909)	698 (317)

For best welding results with Lincoln Electric equipment, always use Lincoln Electric consumables. Visit [www.lincolnelectric.com](http://www.lincolnelectric.com) for more details.

Manufactured at a facility with certified ISO Quality and Environmental Management Systems.

### 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](http://www.lincolnelectric.com) for any updated information.

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