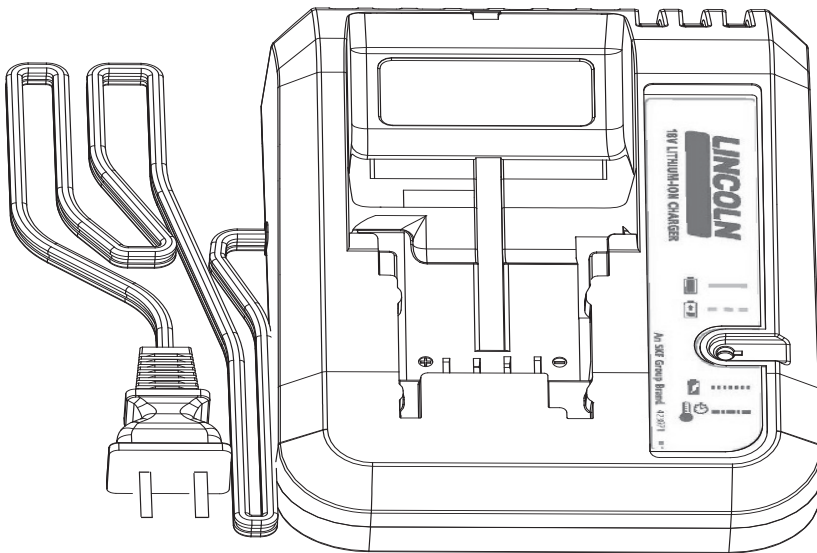


# Battery charger (lithium ion)

1870/1870E



Date of issue	February 2014
Form number	423078A
Section	D7
Page	86A

**⚠ DANGER**

Read manual prior to installation or use of this product. Keep manual nearby for future reference. Failure to follow instructions and safety precautions may result in death or serious injury.

# Safety instructions

This manual contains important safety and operating instructions for the Lincoln model 1870 1870E battery charger.

## DANGER

Do not probe with conductive objects.  
Do not charge damaged battery.  
Risk of Electric Shock 120 VAC or 230 VAC present at charger terminals.  
Replace immediately.  
Failure to comply may result in serious injury or death.

## Read all instructions

- Do not incinerate the battery pack even if it is severely damaged or is completely worn out. The battery pack can explode in a fire. Toxic fumes and materials are created when lithium ion battery packs are burned.
- Do not charge or use battery in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Inserting or removing the battery from the charger may ignite the dust or fumes.
- If battery contents come into contact with the skin, immediately wash area with mild soap and water. If battery liquid gets into the eye, rinse water over the open eye for 15 minutes or until irritation stops. If medical attention is needed, the battery electrolyte for lithium-ion batteries is composed of a mixture of liquid organic carbonates and lithium salts.
- Contents of opened battery cells may cause respiratory irritation. Provide fresh air. If symptoms persists, see a doctor for treatment.

## DANGER

Do not expose battery to spark or flame. Battery liquid may burn.

Do not splash or immerse in water or other liquids. This may cause premature cell failure.

Failure to comply may result in serious injury or death.

## DANGER

Never attempt to open the battery pack for any reason. If the plastic housing of the battery pack breaks or cracks, return to a service center for recycling.

Failure to comply may result in serious injury or death.

- 1 Before using a battery charger, read all instructions and cautionary markings on battery charger, battery pack, and product using battery.
- 2 Do not expose charger to rain, snow or frost.
- 3 Do not abuse cord. Never carry charger by cord or pull on it to disconnect from receptacle. Pull by plug rather than cord when disconnecting charger. Have damaged or worn power cord and strain reliever replaced immediately. Do not attempt to repair power cord.
- 4 Make sure cord is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
- 5 Do not use an extension cord. Use of improper extension cord could result in a risk of fire and electric shock.
- 6 Do not operate charger with damaged cord or plug. Replace immediately, to avoid a hazard. Do not attempt to repair power cord.
- 7 Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way, take it to a qualified service center.

- 8 Do not disassemble charger or battery pack. Take it to a qualified service centre when service or repair is required. Incorrect reassembly may result in risk of electrical shock or fire.
- 9 Unplug charger from outlet before attempting any cleaning to reduce risk of electric shock.

## CAUTION

Do not charge Lincoln model 1871 battery packs with any other charger.

To reduce risk of injury, Lincoln model 1870 or 1870E chargers should only be used to charge Lincoln battery pack model 1871. Other types of batteries may burst.

Failure to comply may result in serious personal injury.

- 10 Charge the battery pack in a well ventilated place; do not cover the charger and battery with anything while charging.
- 11 Do not store the charger or battery packs in locations where the temperature may reach or exceed 105 °F (40 °C) such as a metal tool shed, or a car in the summer which can lead to deterioration of the stored battery.
- 12 Do not charge battery pack when the temperature is below 40 °F (5 °C) or above 105 °F (40 °C). This is very important for proper operation.
- 13 Do not charge battery in damp or wet locations.
- 14 Do not attempt to charge any other cordless tool or battery pack with the Lincoln model 1870 series charger.
- 15 Do not short across the terminals of the battery pack. Extremely high temperatures could cause personal injury or fire.
- 16 This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge.
- 17 Dispose of expended batteries properly. The Lincoln model 1871 battery pack contains rechargeable, lithium-ion batteries. Drop off expended battery packs at your local replacement battery retailer, or your recycling centre.

# Charger operation

## Charging battery pack

Lincoln chargers are designed to charge Lincoln lithium-ion batteries in 30 to 90 minutes depending on the battery's state of charge and temperature.

## Charging procedure

Make sure power circuit voltage is the same as that shown on the charger specification plate.

- 1 Plug the charger into an appropriate outlet before inserting battery pack.
- 2 Insert the battery pack into the charger. The green (charging) light will blink continuously indicating that the charging process has started.
- 3 The completion of charge will be indicated by the green light remaining on continuously. The pack is fully charged and may be used at this time.
- 4 Disconnect charger from power source when not in use.

### CAUTION

Do not probe with conductive objects. 120/230 V AC present at charging terminals. Failure to comply may result in death or personal injury.

### Indicator light operation

- The charge is complete (solid green).
- - - - Battery is charging (flashing green).
- Red, at a fast rate. Replace battery.
- •••• - Charger detected a weak or damaged battery. Stop charging battery. Hot/cold pack delay. Charger detected a battery that is excessively hot or cold. It automatically starts a hot/cold pack delay, suspending charging until temperature of battery has normalized. After this, charger automatically switches to battery charging mode.

### Notice

Battery temperature will increase during and shortly after use. Batteries may not accept a full charge if they are charged immediately after use. Allow the battery pack to cool to room temperature before charging for best results.

### Notice

Vent slots in top and bottom of charger must not be obstructed. Do not charge battery when temperature is below 5 °C (40 °F) or above 40 °C (104 °F).

## Charging notices

Longest life and best performance can be obtained if the battery is charged when the air temperature is between 18 and 24 °C (65 and 75 °F). Do not charge the battery in an air temperature below 5 °C (40 °F) or above 40 °C (105 °F). This is important and will prevent serious damage to the battery.

- 1 The charger and battery may become warm to the touch while charging. This is a normal condition, and does not indicate a problem.
- 2 If the battery does not charge properly:
  - 2.1 Check current at receptacle by plugging in a lamp or other appliance.
  - 2.2 Check to see if the receptacle is connected to a light switch which turns power off when you turn out the lights.
  - 2.3 Move charger and battery to a location where the surrounding air temperature is between approximately 18 to 24 °C (65 to 75 °F).
  - 2.4 If charging problems persist, take the tool, battery and charger to your local service center.
- 3 The battery should be recharged when it fails to produce sufficient power on jobs. Do not continue to use under these conditions. Follow the charging procedure. You may also charge a partially used pack whenever you desire with no adverse affect on the battery.

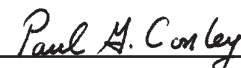
- 4 Under certain conditions, with the charger plugged into the power supply, the exposed charging contacts of the charger can be shorted by foreign material. Foreign materials of a conductive nature such as, but not limited to, steel wool, aluminium foil, or any buildup of metallic particles should be kept away from charger cavities. Always unplug the charger from the power supply when there is no battery in the cavity. Unplug charger before attempting to clean.
- 5 Do not freeze or immerse charger in water or any other liquid.

### WARNING

Do not allow any liquid to get inside charger. Electric shock may result. To facilitate cooling of battery pack after use, avoid placing charger or battery pack in a warm environment such as a metal shed or an un-insulated trailer. Failure to comply may result in serious injury or death.

### Declaration of Conformity:

The manufacturer Lincoln Industrial, hereby declares that the model of the Battery Charger in the version supplied by us complies with the provision of Standard for Safety: Battery chargers for charging engine-Starter Batteries, UL 1012 and Battery Chargers, C22.2 No. 1072



St. Louis, MO January 2014 Paul Conley, Chief Engineer

# Lincoln industrial standard warranty

## Standard limited warranty

Lincoln warrants the equipment manufactured and supplied by Lincoln to be free from defects in material and workmanship for a period of one (1) year following the date of purchase, excluding there from any special, extended, or limited warranty published by Lincoln. If equipment is determined to be defective during this warranty period, it will be repaired or replaced, within Lincoln's sole discretion, without charge.

This warranty is conditioned upon the determination of a Lincoln authorized representative that the equipment is defective. To obtain repair or replacement, you must ship the equipment, transportation charges prepaid, with proof of purchase to a Lincoln Authorized Warranty and Service Center within the warranty period.

This warranty is extended to the original retail purchaser only. This warranty does not apply to equipment damaged from accident, overload, abuse, misuse, negligence, faulty installation or abrasive or corrosive material, equipment that has been altered, or equipment repaired by anyone not authorized by Lincoln. This warranty applies only to equipment installed, operated and maintained in strict accordance with the written specifications and recommendations provided by Lincoln or its authorized field personnel.

**This warranty is exclusive and is in lieu of any other warranties, express or implied, including, but not limited to, the warranty of merchantability or warranty of fitness for a particular purpose. Warranty on items sold by Lincoln, but not manufactured by Lincoln are subject to the warranty consideration, if any, of their manufacturer (such as hoses, hydraulic and electric motors, electrical controllers, etc.) Assistance in making such warranty claims can be offered as required.**

In no event shall Lincoln be liable for incidental or consequential damages. Lincoln's liability for any claim for loss or damages arising out of the sale, resale or use of any Lincoln equipment shall in no event exceed the purchase price. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, therefore the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights. You may also have other rights that vary by jurisdiction.

Customers not located in the Western Hemisphere or East Asia: Please contact Lincoln GmbH and Co. Kg, Walldorf, Germany, for your warranty rights.

## Special limited warranties

### Special limited 2 year warranty SL-V series, single injectors – 85772, 85782, and replacement injectors – 85771, 85781

Lincoln warrants the SL-V Injector series to be free from defects in material and workmanship for two (2) years following the date of purchase. If an injector model (single or replacement) is determined to be defective by Lincoln, in its sole discretion, during this warranty period, it will be repaired or replaced, at Lincoln's discretion, without charge.

### Special limited 5 year warranty series 20, 25, 40 bare pumps, pmv bare pumps, heavy duty and 94000 series bare reels

Lincoln warrants series 20, 25, 40 bare pumps, PMV bare pumps, heavy duty (82206), mini bench (81133, 81323), and all 94000 LFR series (single arm and dual arm) bare reels to be free from defects in material and workmanship for five (5) years following the date of purchase. If equipment is determined by Lincoln, in its sole discretion, to be defective during the first year of the warranty period, it will be repaired or replaced at Lincoln's discretion, without charge. In years two (2) and three (3), the warranty on this equipment is limited to repair with Lincoln paying parts and labor only. In years four (4) and five (5), the warranty on this equipment is limited to repair with Lincoln paying for parts only.

### Special limited 5 year warranty limited oil meters, limited fluid control valves, aod (air-operated diaphragm pumps)

Lincoln warrants the 712 series control valves, 912 series lube meters, electronic lube meters (980, 981, 982 series), our universal inline digital meters (812/813 series), and our AOD pump offering to be free from defects in material and workmanship for five (5) years following the date of purchase. If either is determined to be defective by Lincoln, in its sole discretion, during the warranty period, they will be repaired or replaced, at Lincoln's discretion, without charge.

### Special DEF (diesel exhaust fluid) limited warranty

DEF products are warranted to be free from defects in material and workmanship for a period of one (1) year following the date of purchase. The following exceptions to the standard warranty period are in effect:

- **85700-30/85700-50 DEF hose reels (bare reel only),** 277251/277252 AC DEF pumps, and 277256 and 277257 DEF meters are warranted for two (2) years from date of purchase.
- **85623 DEF AOD (air operated diaphragm) pumps** are covered under the standard five (5) year AOD pump warranty.

If either is determined to be defective by Lincoln, in its sole discretion, during the warranty period, they will be repaired or replaced, at Lincoln's discretion, without charge.

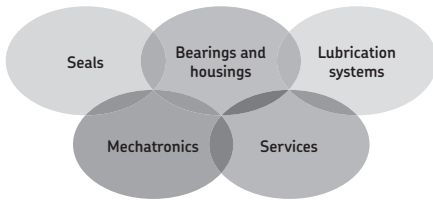
### Lincoln Industrial contact information

To find Lincoln Industrial's nearest service center call the following number; customer service 314-679-4200 (international number 01-314-679-4200) or you may also use our website [www.lincolnindustrial.com](http://www.lincolnindustrial.com)

This page left intentionally blank

This page left intentionally blank

This page left intentionally blank



### The Power of Knowledge Engineering

Combining products, people, and application-specific knowledge, SKF delivers innovative solutions to equipment manufacturers and production facilities in every major industry worldwide. Having expertise in multiple competence areas supports SKF Life Cycle Management, a proven approach to improving equipment reliability, optimizing operational and energy efficiency and reducing total cost of ownership.

These competence areas include bearings and units, seals, lubrication systems, mechatronics, and a wide range of services, from 3-D computer modelling to cloud-based condition monitoring and asset management services.

SKF's global footprint provides SKF customers with uniform quality standards and worldwide product availability. Our local presence provides direct access to the experience, knowledge and ingenuity of SKF people.

© SKF is a registered trademark of the SKF Group.

© Lincoln is a registered trademark of Lincoln Industrial Corp.

© SKF Group 2014

The contents of this publication are the copyright of the publisher and may not be reproduced (even extracts) unless prior written permission is granted. Every care has been taken to ensure the accuracy of the information contained in this publication but no liability can be accepted for any loss or damage whether direct, indirect or consequential arising out of the use of the information contained herein.

SKF PUB LS/14 14496 EN · February 2014 · Form 423078A

**LINCOLN**

**SKF**