24 VOLT DUAL MODE
WHEELCHAIR BATTERY CHARGER
MODEL 12630 TYPE 24EL8
E&J PRODUCT NO. 90483465

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Supply</td>
<td>120 volts, 60 Hertz, single-phase, 4 amps maximum</td>
</tr>
<tr>
<td>DC Output</td>
<td>24 volts, 8 amps, tapering to 3 amps or less</td>
</tr>
<tr>
<td>Battery Capacity</td>
<td>Two series connected 6 cell, 12 volt deep cycle motive power batteries. Gel cell and sealed or conventional replaceable electrolyte deep-cycle batteries</td>
</tr>
<tr>
<td>Battery Size</td>
<td>28 to 55 amp hours 65 to 85 amp hours</td>
</tr>
<tr>
<td>Normal Recharge Time</td>
<td>8 hours 12 hours</td>
</tr>
</tbody>
</table>

PLEASE SAVE THESE IMPORTANT SAFETY AND OPERATING INSTRUCTIONS

For correct operation of the equipment, it is important to read and be familiar with this entire manual before installing and operating the charger.
DO NOT DISCARD THIS MANUAL AFTER READING.

LOOK FOR THIS SYMBOL TO POINT OUT SAFETY PRECAUTIONS. IT MEANS: BECOME ALERT—YOUR SAFETY IS INVOLVED. IF YOU DO NOT FOLLOW THESE SAFETY INSTRUCTIONS, INJURY OR PROPERTY DAMAGE CAN OCCUR.

Features

• Charger output characteristics are adjustable to charge gel cell and sealed or conventional replaceable liquid electrolyte deep-cycle lead-acid batteries. Different charge characteristics are selected by a switch on the front of the charger.
• Patented electronic circuit monitors battery state of charge and automatically turns charger off when the batteries reach full charge.
• Line voltage compensation produces consistent charger output for AC supply voltage variations of ± 10% from nominal.
• Convection cooled design for maximum reliability and minimum maintenance.

Before using battery charger, read all instructions and cautionary markings on battery Charger, battery, and wheelchair. Use of an attachment not recommended or sold by battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.

INTRODUCTION

The Dual-Mode wheelchair battery charger is designed to recharge deep-cycle batteries of conventional replaceable electrolyte or gel cell and “maintenance-free” sealed design. The different charge characteristics required by these different
types of battery designs are selected by sliding the BATTERY TYPE selector switch to the correct setting. A patented electronic circuit turns the charger ON and OFF automatically. Batteries used on wheelchairs are subjected to severe deep-cycle duty on a daily basis. For this reason, it is important that only Deep-Cycle batteries be used.

**CAUTION: THIS CHARGER IS FOR USE ONLY ON 12 CELL 28-85 AMP-HR (20 HR. RATE), 2.37-2.50 VOLTS PER CELL MAXIMUM VOLTAGE RECHARGEABLE, DEEP-CYCLE BATTERY SYSTEMS. THIS CHARGER IS FOR USE ON REPLACEABLE ELECTROLYTE OR GEL CELL AND SEALED DEEP-CYCLE BATTERIES. “BATTERY TYPE” SWITCH MUST BE SET TO THE PROPER TYPE OF BATTERY. BATTERIES IMPROPERLY MATCHED WITH CHARGER MAY BURST, CAUSING PERSONAL INJURY AND DAMAGE TO BATTERIES OR CHARGER.**

**INITIAL INSTALLATION**

Circuit breaker or fuse protection in the 120 volt AC outlet into which the charger is to be plugged should allow 5 amps per charger. Do not overload the electric outlet. The use of an extension cord with the charger should be avoided. The use of an improper extension cord could result in a risk of an electric shock. If an extension cord must be used, use a three-conductor, No. 16 AWG (or larger) cord with ground, properly wired, in good electrical condition, and keep it as short as possible. Make sure that the pins of the plug on the extension cord are the same number, size, and shape as that of the plug on the battery charger. Locate all cords so that they will not be stepped on, tripped over, or otherwise subjected to damage or stress. Do not operate this charger with a damaged cord or plug. Do not operate this charger if it has received a sharp blow, was dropped or otherwise damaged in any manner; refer to a qualified service agent.

Provide adequate ventilation for both batteries and charger. The convection cooled design requires an unobstructed flow of cooling air for proper operation. Keep all charger ventilation openings at least two inches (2") (5.08cm) away from walls and other objects. Do not allow clothing, blankets, or other material to cover charger. **DO NOT** place under bed.

**WARNING: CHARGERS CAN IGNITE FLAMMABLE MATERIALS AND VAPORS. DO NOT USE NEAR FUELS, GRAIN DUST, SOLVENTS, THINNERS, OR OTHER FLAMMABLES.**

**CAUTION: KEEP DRY; DO NOT EXPOSE TO RAIN OR SPRAY. FOR STORAGE, KEEP CHARGER IN A BUILDING. REPLACE WORN, CUT OR DAMAGED ELECTRICAL CORDS AND PLUGS IMMEDIATELY.**

**GROUNDING INSTRUCTIONS**

This battery charger must be grounded to reduce the risk of electric shock. It is equipped with an electric cord having an equipment-grounding conductor and a grounding-type plug. The plug must be plugged into an appropriate outlet, supplied with a ground fault interrupter, that is properly installed and grounded in accordance with the National Electrical Code and all local codes and ordinances.

**DANGER: IMPROPER CONNECTION OF THE EQUIPMENT-GROUNDING CONDUCTOR CAN RESULT IN RISK OF ELECTRIC SHOCK. DO NOT REMOVE GROUNDING PRONG FROM PLUG.**

This battery charger is equipped with a grounding plus as illustrated in Figure A, for use on a nominal 120 volt, 60 Hertz circuit. A temporary adapter, as illustrated in Figures B and C, may be used until a properly grounded outlet can be installed by a qualified electrician. The GREEN-colored rigid ear extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box.

**DANGER: BEFORE USING THE ADAPTER AS ILLUSTRATED, BE CERTAIN THAT THE CENTER SCREW OF THE OUTLET PLATE IS GROUNDED.**

**GROUNDING METHODS**

NOTE: Use of adapter shown in Figures B and C is NOT permitted in Canada.
BATTERY TYPE

Battery manufacturers frequently use the same battery cases for different battery types. Conventional liquid electrolyte deep cycle batteries have removable cell caps. Water electrolyzed by discharging and charging the battery is replaced through these openings.

Gel cell and sealed "maintenance-free" batteries are generally distinguished by non-removable cell caps. The physical appearance of battery case is frequently the same as that of a conventional liquid electrolyte battery though the cell caps are generally not removable.

Refer to the battery manufacturer's information panel on the battery case to determine the type battery you have. If the information panel is missing or not legible, do not use the battery. Refer to your dealer if you do not understand what type of battery you are using and have them set the BATTERY TYPE switch accordingly.

The BATTERY TYPE switch is a two-position slide switch visible at the opening in the front panel of the electronic timer assembly. Slide the switch from one setting to the other through the opening. Take care not to damage the switch when moving it to the desired setting.

CHARGING

YELLOW INDICATOR LIGHT
FAULT
RED INDICATOR LIGHT

BATTERY TYPE SWITCH

SET HERE FOR
GEL CELL, SEALED OR MAINT. FREE BATTERIES

SET HERE FOR
CONVENTIONAL LIQUID ELECTROLYTE BATTERIES

U.S. PAT. NO. 3,794,905
GR. BR. PAT. NO. 1,414,359
FR. PAT. NO. 2,203,199
W. GR. PAT. NO. 2,351,559
JAPAN PAT. NO. 33133/1978

NORMAL OPERATION

Instructions printed on cover of charger are for daily reference.

1. Connect charger DC output cord to the wheelchair charging receptacle. Do not connect the DC plug unless the Power switch is in the "OFF" position and the power supply cord is disconnected.

CAUTION: MAKE SURE THE BATTERY PACK IS A 24 VOLT, 12 CELL, SERIES CONNECTED, 28-85 AMP-HOUR (20 HR. RATE), RECHARGEABLE DEEP-CYCLE BATTERY SYSTEM. THE "GEL CELL AND SEALED DEEP-CYCLE BATTERY" SETTING CHARGES TO A MAXIMUM ON-CHARGE VOLTAGE OF 2.37 VOLTS PER CELL. THE "REPLACEABLE ELECTROLYTE DEEP-CYCLE BATTERY" SETTING HAS AN ON-CHARGE VOLTAGE OF AT LEAST 2.50 VOLTS PER CELL. VISUALLY CHECK THAT THE "BATTERY TYPE" SWITCH IS SET CORRECTLY FOR THE TYPE OF BATTERY YOU ARE USING.

CAUTION: MANY DC PLUGS DO NOT HAVE A STANDARDIZED WIRING PATTERN. BEFORE CONNECTING TO EQUIPMENT OTHER THAN EVEREST & JENNINGS, VERIFY THAT THE CHARGER PLUG WIRING PATTERN MATCHES THE EQUIPMENT BEING CHARGED BEFORE CONNECTING. DAMAGE MAY RESULT IF A PLUG THAT IS WIRED FOR OTHER APPLICATIONS IS USED ON YOUR EQUIPMENT. CONTACT YOUR DEALER OR THE EQUIPMENT MANUFACTURER FOR MORE INFORMATION.

DANGER: TO PREVENT ELECTRIC SHOCK, DO NOT TOUCH UNINSULATED PARTS OF THE CHARGER DC OUTPUT CONNECTOR, BATTERY CONNECTOR, OR BATTERY TERMINALS. MAKE SURE ALL ELECTRICAL CONNECTORS ARE IN GOOD WORKING CONDITION. DO NOT USE CONNECTORS THAT ARE CRACKED, CORRODED OR DO NOT MAKE ADEQUATE ELECTRICAL CONTACT. USE OF A DAMAGED OR DEFECTIVE CONNECTOR MAY RESULT IN A RISK OF OVERHEATING OR ELECTRIC SHOCK.

2. Connect the power supply cord to a properly grounded, 120 volt, 60 Hertz single phase outlet.

3. Move the POWER switch to "AUTO". The ammeter needle may bounce initially and the transformer should hum slightly.

WARNING: LEAD-ACID BATTERIES GENERATE GASES WHICH CAN BE EXPLOSIVE. TO PREVENT ARcing OR BURNING NEAR BATTERIES, DO NOT DISCONNECT DC CHARGING CORD FROM BATTERIES WHEN THE CHARGER IS OPERATING. IF THE CHARGE CYCLE MUST BE INTERRUPTED, MOVE THE POWER SWITCH TO
"OFF", AND DISCONNECT THE Charger POWER SUPPLY CORD BEFORE DISCONNECTING THE DC OUTPUT CORD FROM THE BATTERIES. KEEP SPARKS, FLAME, AND SMOKING MATERIALS AWAY FROM BATTERIES.

WARNING: ALWAYS SHIELD EYES WHEN WORKING NEAR BATTERIES. DO NOT PUT WRENCHES OR OTHER METAL OBJECTS ACROSS BATTERY TERMINAL OR BATTERY TOP. ARCING OR EXPLOSION OF THE BATTERY CAN RESULT!

Charger will turn ON one to three (1-3) seconds after completion of the last of the above actions, and the charger ammeter will indicate initial charge current.

If the YELLOW light does not illuminate and the POWER switch is in the "ON" position, the AC outlet is not live or an open circuit exists in the wheelchair’s internal circuitry. Test for a live AC outlet by connecting a suitable household appliance to the specific outlet. If the outlet tests live, then the fault is in the wheelchair wiring. Take the wheelchair to your dealer to have the fault corrected (see Troubleshooting).

4. Monitor ammeter for correct initial charge rate. Correct initial charge rate should be between 7 and 9 amps. As the battery reaches approximately 70% of full charge, the charge rate gradually decreases to a reading determined by the "BATTERY TYPE" switch setting and the condition of the batteries.

Replaceable Electrolyte Deep Cycle Batteries

With healthy batteries, the charging current will decrease to between 2 and 4 amps and remain there until the charger turns off. As replaceable electrolyte deep cycle batteries lose capacity, the charge rate may no longer decrease to this reading. The charger will still determine when the batteries are as charged as they are capable of being and turn off. When the batteries will no longer perform as desired, they should be replaced.

Gel Cell and Sealed Deep Cycle Batteries

The charging current will decrease to near zero and remain there until the charger turns off. Gel cell deep cycle batteries will still taper to near zero charge current even as they wear out and lose capacity and range. As sealed deep-cycle batteries lose capacity and range, the charge current may no longer decrease to this low a reading. The charger will still determine when the batteries are as charged as they are capable of being and turn off. When the batteries will no longer perform as desired, they should be replaced.

Charger is equipped with a temperature sensor which automatically turns the charger off if it overheats. Should charger turn off before the batteries are fully charged, check to be sure all ventilation openings are free from obstructions. After charger cools down to a safe temperature it will automatically restart. If charger repeatedly overheats, refer to a qualified service agent.

5. Charger turns off automatically when batteries are fully charged. Charge time varies with battery size and depth of discharge. Allow 8 hours for normal charging. Larger batteries (greater than 85 ampere-hours) or severely discharged batteries may require up to 14 hours to be properly charged and equalized. If the charger operates for 14 hours and is unable to fully charge the batteries, an internal timer turns the charger off, extinguishes the YELLOW charge light, and turns the RED fault light on.

6. After the charger has turned off, move the POWER switch to "OFF", disconnect AC cord first, then the DC output cord from the wheelchair charging receptacle.

CAUTION: TO AVOID DAMAGE TO THE CHARGER CORD AND BATTERY CONNECTOR, DISCONNECT BY GRASPING THE PLUG HANDLE AND PULLING IT STRAIGHT OUT OF THE BATTERY CONNECTOR. DO NOT PULL ON THE CHARGER CORD. DO NOT TWIST, ROCK, OR PULL THE PLUG SIDEWAYS.

WARNING: TO PREVENT ARCING OR BURNING NEAR THE BATTERIES, DO NOT DISCONNECT THE OUTPUT CORD FROM THE BATTERIES WHILE THE CHARGER IS OPERATING. IF THE CHARGE CYCLE MUST BE INTERRUPTED, FIRST SLIDE THE POWER SWITCH TO "OFF", THEN DISCONNECT AC CORD, AND FINALLY THE OUTPUT CORD FROM THE BATTERIES. KEEP SPARKS, FLAME, AND SMOKING MATERIALS AWAY FROM BATTERIES. NO SMOKING.

WARNING: DO NOT LEAVE THE DC OUTPUT CONNECTOR PLUGGED IN WHILE UNATTENDED FOR MORE THAN TWO (2) DAYS. SEvere OVERCHARGING AND DAMAGE TO THE BATTERIES MAY RESULT IF THE CHARGER DOES NOT TURN OFF.
PROPER CARE OF MOTIVE POWER BATTERIES

Batteries used on wheelchairs are subjected to severe deep-cycle duty on a daily basis. For this reason, it is important that only deep-cycle batteries be used. Although these batteries are designed to withstand such duty, the following precautions must be observed to obtain good performance and maximum cycle life.

**CAUTION**: ALWAYS WEAR PROTECTIVE EYE SHIELDS AND CLOTHING WHEN WORKING WITH BATTERIES. BATTERIES CONTAIN ACID WHICH CAN CAUSE BODILY HARM. DO NOT PLACE WRENCHES OR OTHER METAL OBJECTS ACROSS THE BATTERY TERMINALS OR BATTERY TOP. ARCING OR EXPLOSION OF THE BATTERY MAY RESULT. SOMEONE SHOULD BE WITHIN THE RANGE OF YOUR VOICE OR CLOSE ENOUGH TO COME TO YOUR AID WHEN YOU WORK NEAR A LEAD-ACID BATTERY. HAVE PLENTY OF FRESH WATER AND SOAP NEARBY IN CASE BATTERY ACID CONTACTS SKIN, CLOTHING, OR EYES.

**WARNING**: RISK OF EXPLOSIVE GASES. WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING YOUR CHARGER, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.

1. New batteries should be given a full charge before their first use because it is difficult to know how long the batteries have been stored.
2. Limit use of new batteries for first 5 cycles. New batteries are not capable of their rated output until they have been discharged and charged a number of times.
3. Do not excessively discharge batteries. Excessive discharge can cause polarity reversal of individual cells resulting in complete failure shortly thereafter. Limited use of new batteries will minimize the risk of cell reversals.
4. **CHECK THE LEVEL OF THE ELECTROLYTE IN CONVENTIONAL LIQUID ELECTROLYTE LEAD ACID BATTERIES MONTHLY. MAINTAIN THE PROPER ELECTROLYTE LEVEL BY ADDING DISTILLED OR PURIFIED WATER WHEN NECESSARY.** Electrolyte levels fall during discharge and rise during charge. Therefore, it is mandatory that water be added to the cells ONLY when they are fully charged; do not overfill. Old batteries require more frequent additions of water than new batteries.
5. Keep tops of batteries clean and dry to prevent excessive self-discharge. Keep the battery terminals reasonably tight.

**PERSONAL PRECAUTIONS**

1. Someone should be within the range of your voice or close enough to come to your aid when you work near a lead-acid battery.
2. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
3. Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
4. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.
5. NEVER smoke or allow a spark or flame in vicinity of batteries.
6. Be extra cautious to reduce a risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause explosion.
7. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit high enough to weld a ring or the like to metal, causing a severe burn.
8. NEVER charge a frozen battery.

**DUAL MODE WHEELCHAIR CHARGER TROUBLESHOOTING**

**CAUTION**: DO NOT DISASSEMBLE THE CHARGER. TAKE IT TO A QUALIFIED SERVICE AGENT WHEN SERVICE OR REPAIR IS REQUIRED. INCORRECT REASSEMBLY MAY RESULT IN RISK OF ELECTRIC SHOCK OR FIRE. THE FOLLOWING PROCEDURES ARE INTENDED ONLY TO DETERMINE IF A MALFUNCTION MAY EXIST IN THE CHARGER, OR IN THE WHEELCHAIR AND BATTERIES.

**DANGER**: TO REDUCE RISK OF ELECTRIC SHOCK, ALWAYS DISCONNECT BOTH THE POWER SUPPLY CORD AND THE OUTPUT CORD BEFORE ATTEMPTING ANY MAINTENANCE OR CLEANING.
CAUTION: DO NOT OPERATE THE CHARGER IF IT IS DAMAGED OR APPEARS TO BE MALFUNCTIONING. PERSONAL INJURY OR DAMAGE TO THE CHARGER AND/OR BATTERIES MAY RESULT.

1. If the YELLOW charging light does not illuminate one to three (1-3) seconds after the charger connections are completed, it indicates one of the following and the charger is prevented from turning on:
   a. Charger power switch is not in the AUTO position.
   b. Charger is not plugged into a live AC outlet.
   c. Fault in wheelchair wiring. Poor or open connections in the wheelchair wiring that connects to the batteries; corroded terminals, loose or worn plugs and receptacle, loose or worn fuseholders. (Have your dealer repair the wheelchair.)
   d. Battery connections in wheelchair are wrong (reverse polarity).
   e. One or both batteries no longer serviceable (voltage below 13 volts for 24 volt system).

2. If the charger turns off before the batteries are fully charged, it indicates one of the following:
   a. Charger internal thermostat turned the charger off due to overheating because charger ventilation openings are blocked. After the charger has cooled down to a safe temperature, it will automatically restart. If the charger repeatedly overheats, it may be malfunctioning.
   b. The AC power was interrupted during charge.
   c. The DC cord was accidentally disconnected from the battery during charge.
   d. Fault in wheelchair wiring. The wheelchair charging circuit has high resistance, corroded or loose connections; loose or worn wheelchair charging receptacle, loose or worn wheelchair fuseholders.
   e. The battery has been allowed to sulfate. Charge the battery no less frequently than once every three (3) days when the equipment is lightly utilized. Once sulfation is allowed to take place, it may be partially reduced by returning, temporarily, to daily charging.

3. The decrease in equipment range where the chair loses power earlier and earlier in the day indicates one of the following:
   a. The electrolyte level in conventional liquid electrolyte lead-acid batteries was allowed to drop below the top of the battery plates. Add distilled water to just cover the top of the plates immediately upon discovery and fill to the proper level with distilled water at the completion of the very next charge cycle. Battery capacity lost in this matter is permanent and is not recovered with additional charge cycles.
   b. Use of the wheelchair before the batteries have been fully charged and the charger turns off shortens battery life and hastens the onset of reduced daily range. Battery capacity lost in this manner is permanent and is not recovered with additional charge cycles.
   c. This is the normal wearout process for all types of deep-cycle motive power batteries.

4. The charger operates through 14 hours before turning off. The YELLOW charge light turns off and the RED fault light comes on. This indicates one of the following:
   a. Batteries larger than 85 amp-hour capability (20 hr rate) can require more than 14 hours to charge.
   b. New batteries (5 cycles or less) can required more than 14 hours to charge.
   c. Very deeply discharged batteries (100% discharged) can require more than 14 hours to charge.
   d. Several failed cells in the batteries that do not allow the charge rate to taper below 4 amps.
WIRING DIAGRAM

PARTS LIST FOR MODEL 12630
TYPE 24EL8  120 VAC / 60 HZ
E&J PRODUCT NO. 90483465

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<thead>
<tr>
<th>PART NO.</th>
<th>QTY.</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>14385S</td>
<td>1</td>
<td>CASE ASSEMBLY</td>
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<tr>
<td>22321S</td>
<td>1</td>
<td>TRANSFORMER ASSEMBLY</td>
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<tr>
<td>12450S</td>
<td>1</td>
<td>ELECTRONIC TIMER ASSEMBLY</td>
</tr>
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<td>13811S</td>
<td>1</td>
<td>AMMETER, 10 AMP</td>
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<tr>
<td>14308S</td>
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<td>CONTROL CABLE ASSEMBLY</td>
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<tr>
<td>15184S</td>
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<td>SWITCH, SLIDE, SPST, 125 VAC, 6 AMP</td>
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<td>14341S</td>
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<td>THYRISTOR ASSEMBLY</td>
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<td>04275S</td>
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<td>BUSHING, 6N3-4, INSULATOR FOR CORDSETS</td>
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<td>14334S</td>
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<td>CORDSET, AC, 18/3,102&quot;</td>
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<td>23014S</td>
<td>1</td>
<td>CORDSET, DC, 14/2, 82&quot;, W/ CANNON PLUG</td>
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</tbody>
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