

CADD™ External Power Source (EPS) System

Reorder No. **21-3800**

Instructions for Use

IMPORTANT: This instruction guide is intended for **CLINICIAN** and **PATIENT** use.

NOTE: Before you connect or operate the EPS System, please read these instructions completely and retain for reference.

CLINICIAN NOTE: For detailed instructions, specifications, warnings, warranty, and additional information on operating CADD® pumps, please refer to the *Operator's Manual* supplied with the product.

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SYMBOLS



CAUTION: Federal (USA) law restricts this device to sale by or on the order of a physician.



Collect Separately

Introduction to the CADD™ External Power Source (EPS) System

The CADD™ External Power Source (EPS) System is designed to provide an alternative source of power for the following pumps: CADD-1®, CADD-PCA®, CADD-PLUS®, CADD-TPN®, and CADD-Prizm® ambulatory infusion pumps.

Description of the EPS System

The following EPS System components are used with all pumps:

- **Power pack with replaceable battery.** The power pack contains a rechargeable battery that can be replaced. However, the replaceable battery is not intended to be changed by the patient or the clinician.

Charge the battery using the *Battery Refresh Cycle* before *first use, every 30 days* while in regular use, *at least once every 6 months* while in storage, or if the battery shows signs of reduced capacity. The *Battery Refresh Cycle* button is located on the top of the power pack. See the Battery Maintenance section for more information.

CAUTION: Failure to recharge or refresh the battery during prolonged storage may cause deep battery discharge, leading to premature battery replacement in the power pack.

- **AC adapter.** The AC adapter has three prongs that plug into an AC wall outlet. You will use the AC adapter to recharge the power pack. You may also use the AC adapter with the power pack to run the pump.

The AC adapter can also be plugged directly into the CADD-Prizm® pump to provide power from the wall outlet.

In addition, the following components are used with all pumps *except the CADD-Prizm® pump*:

- **Battery adapter.** The battery adapter fits into the pump's battery compartment in place of a 9-volt battery. The battery adapter connects the pump to the power pack.
- **Notched battery door.** The notched battery door covers the pump's battery compartment. The notch provides an opening for the battery adapter cable.

Charging the Power Pack

Before each use, recharge the power pack as described below.

Within the charging temperature range [10°C to 35°C (50°F to 95°F)], the power pack will become fully charged in approximately 7 hours or less.

NOTE: Use the *Battery Refresh Cycle* to discharge and recharge the power pack automatically (see the “Battery Maintenance” section.):

- before *first use*
- *every 30 days* while in regular use
- *at least once every 6 months* while in storage

To charge the power pack

1. Attach the AC adapter connector to the power pack INPUT connector. (Figure 1)

NOTE: The power pack may remain attached to the pump during charging. Running the pump while charging the power pack will not drain power from the power pack.

2. Plug the AC adapter’s 3-prong plug into an AC wall outlet.

CAUTION: Do not remove the grounding prong of the AC adapter or use a 2-prong adapter with the AC adapter.

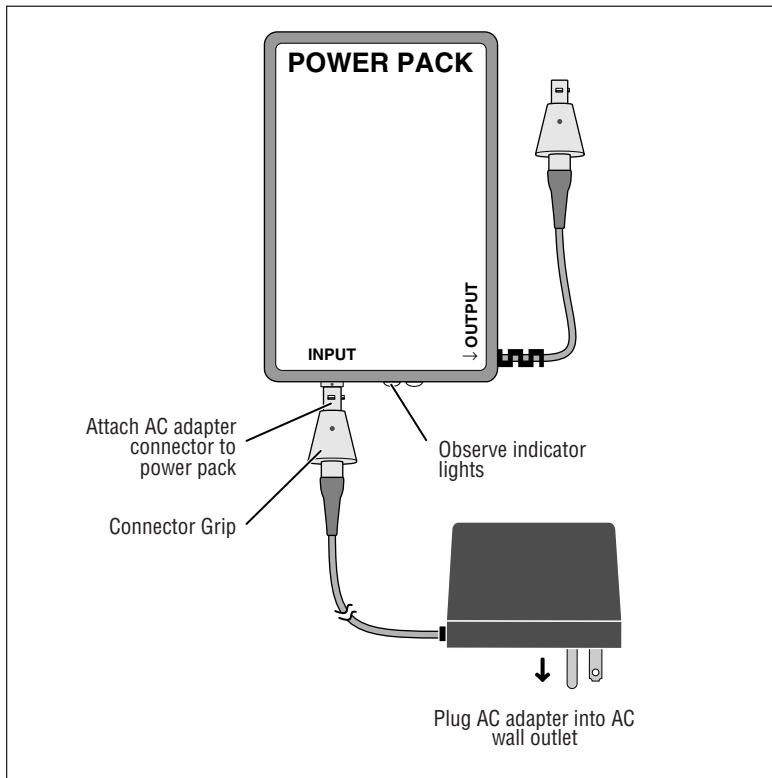
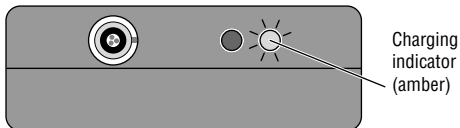


Figure 1. Attaching the AC adapter to the power pack INPUT connector. (Your AC adapter and power pack may or may not be supplied with the connector grips shown.)

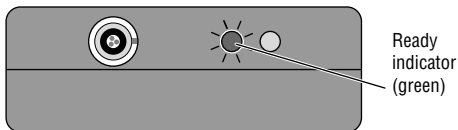
Charging the Power Pack *(continued)*

3. Observe the power pack's indicator lights:

- The **charging** (amber) indicator light shows the power pack is charging.



- You may use the power pack when the **ready** (green) indicator light comes on.

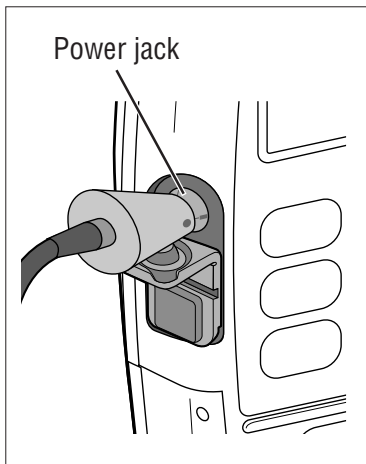


- If neither light is on, check the connections and AC outlet. (Refer to the *Troubleshooting Chart* for more information about the indicator lights).

Connecting the Power Pack to the CADD-Prizm® Pump

Before connecting the power pack to the CADD-Prizm® pump, make sure the pump contains a good 9-volt battery.

1. Open the Power jack cover on the side of the pump.
2. Line up the red mark on the power pack's output connector with the red mark on the pump. Push the connector forward until it stops. Do not twist or turn the connector. Grasp the connector directly behind the flared portion and pull lightly to assure that the connector is securely attached.



CAUTION: Failure to push the connector all the way forward may result in an intermittent connection, and the connector may dislodge, causing a loss of power.

3. Watch for the message “Power Pack Good” on the pump’s display. Then you can continue programming or operating the pump.

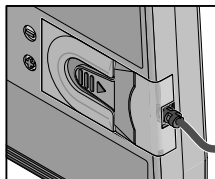
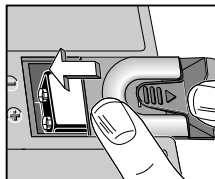
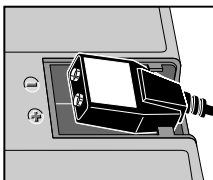
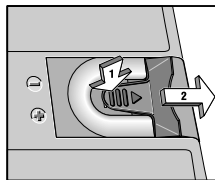
CAUTION: If the CADD-Prizm® pump is mounted on an IV pole, do not allow the power pack to hang as this may result in damage to the power pack.

Connecting the Power Pack and Battery Adapter to CADD-1®, CADD-PCA®, CADD-PLUS®, and CADD-TPN® pumps

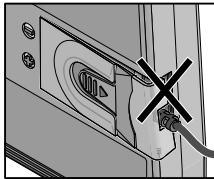
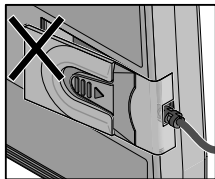
NOTE: The battery adapter should not be connected to the power pack while the battery adapter is being inserted or removed from the pump's battery compartment.

CAUTION: Do not attach the battery adapter connector directly to the AC adapter connector, since no alarm will sound to alert you if either the pump becomes disconnected from the AC outlet, or if a power outage occurs.

1. Push down and hold the battery release button while sliding the door off.
2. Insert the battery adapter into the pump's battery compartment, bottom end first.
3. Place the **notched battery door** (supplied with the battery adapter) halfway over the battery compartment, and press the battery adapter into the compartment by pushing down on top of the door with your thumb. Make sure the battery adapter cable extends through the notch in the battery door.
4. Slide the door closed. Ensure that the door is latched by trying to remove the door without pressing the release button.

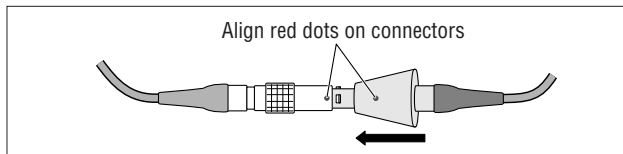


IMPORTANT: If a gap is present anywhere between the battery door and the pump housing, the door is not properly latched.



5. Connect the power pack OUTPUT cable connector to the battery adapter connector:

- Grasp the battery adapter connector in one hand. Grasp the flared grip of the power pack OUTPUT connector in the other hand.
- Align the red dots on the connectors.



- Push the connectors together using a steady, straight force until you feel a definite stop. **DO NOT** use a twisting or turning motion, or misalign the connectors.

CAUTION: To avoid damaging the connectors or cables, do not use excessive force or instruments, such as pliers, to attach the connectors.

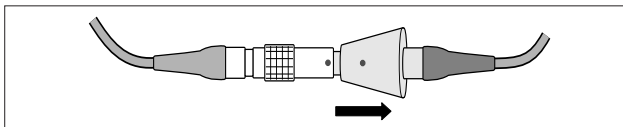
6. The pump will now begin the power up sequence, which consists of a series of beeps. After that, you will be ready to program or start the pump.

NOTE: If you wish to recharge the power pack during an infusion, you may connect the AC adapter to the power pack and plug the AC adapter into a wall outlet. See *Charging the Power Pack* for instructions on attaching the AC adapter.

Detaching the Battery Adapter from the Power Pack

CAUTION: To avoid damaging the connectors or cables, do not use excessive force or instruments, such as pliers, to detach the connectors.

1. Make sure the pump is stopped.
2. Grasp the battery adapter connector with one hand.
3. Grasp the flared grip of the power pack OUTPUT connector with the other hand.
4. Pull the sliding collar back using a steady, straight pull. **DO NOT** use a twisting or turning motion.
5. Separate the connectors.



EPS System Troubleshooting Chart

PROBLEM	PROBABLE CAUSE	SOLUTION
<p>The power pack is beeping (single beep every few seconds) and the amber LED is flashing.</p>	<p>The battery in the power pack has reached a low charge.</p> <p>Note: When the beeping starts, the pump will continue to run for approximately 30 minutes. Then, the pump will sound a low battery alarm.</p>	<p><i>CADD-Prizm® pump:</i></p> <ul style="list-style-type: none">• Attach the AC adapter to the power pack and plug the AC adapter into a wall outlet. This stops the beeping and begins recharging the power pack; or• Disconnect the power pack. The backup 9 volt battery will continue to power the pump. Recharge the power pack. <p><i>Other CADD® pumps:</i></p> <ul style="list-style-type: none">• Attach the AC adapter to the power pack and plug the AC adapter into a wall outlet. This stops the beeping and begins recharging the power pack; or,• Stop the pump. Disconnect the battery adapter from the power pack, then remove the battery adapter from the pump. <p>To continue your infusion, you may insert a fresh 9-volt alkaline or lithium battery into the pump.</p> <p>Note: If none of the above solutions work, and the power pack continues beeping, call your clinician.</p>

EPS System Troubleshooting Chart *(continued)*

PROBLEM	PROBABLE CAUSE	SOLUTION
With the AC adapter attached, neither of the indicator lights come on.	<ul style="list-style-type: none">• The AC adapter connector is not properly attached to the power pack INPUT connector.• The AC wall outlet is not receiving power.	<ul style="list-style-type: none">• Detach the connectors and reattach them according to the instructions in this guide. Do not twist or turn the connectors while attaching. Make sure the red dots of the connectors align.• Make certain there is power to the AC wall outlet.• If neither solution works, call your clinician.
Connectors are difficult to attach.	<ul style="list-style-type: none">• The connectors may have twisted or turned while being attached.• The connector pins of the power pack OUTPUT connector and/or the AC adapter may be bent.	<ul style="list-style-type: none">• Align the red dots and refer to the instructions on attaching the connectors.• Look at the connector pins. They should appear straight. If the pins are bent, call your clinician. <p>WARNING: The EPS System should not be used if the connector pins are bent or damaged in any way.</p>

EPS System Troubleshooting Chart *(continued)*

PROBLEM	PROBABLE CAUSE	SOLUTION
<p>With the AC adapter attached, the charging (amber) indicator light does not go off when expected.</p>	<ul style="list-style-type: none">• The power pack is too hot or too cold.• The battery in the power pack may not have been recharged sufficiently.• The battery in the power pack may need to be replaced.	<ul style="list-style-type: none">• Make sure the air temperature is within the charging temperature range. Allow the power pack to warm up or cool down if necessary.• Continue to recharge the power pack. If the charging indicator light remains on, the power pack's battery needs to be replaced. Call your clinician. <p>If you need to begin your infusion, do the following:</p> <p><i>CADD-Prizm® pump</i></p> <ul style="list-style-type: none">• Make sure a good 9 volt battery is installed and begin your infusion; or,• Attach the AC adapter to the pump's Power jack and plug the AC adapter into a wall outlet. <p><i>Other CADD® pumps</i></p> <ul style="list-style-type: none">• Insert a fresh 9-volt alkaline or lithium battery into the pump and begin your infusion.

EPS System Troubleshooting Chart *(continued)*

PROBLEM	PROBABLE CAUSE	SOLUTION
The AC adapter and/or the power pack feels too hot to touch.	This may indicate a damaged AC adapter. NOTE: The AC adapter and/or power pack can become warm, especially during discharging. This is normal.	Remove the AC adapter from the AC wall outlet; then contact your clinician.
Amber light is flashing with no alarm.	Accidentally pressed the Battery Refresh Cycle button.	Unplug the AC adapter from the power pack to stop discharging. If desired, refer to instructions for recharging the power pack.

Warnings

To avoid serious personal injury, it is essential to observe the following warnings:

- **Do not** use the system in the presence of flammable anesthetics or explosive gases.
- **Do not** destroy the power pack by incineration. It may explode.
- **Do not** allow the two battery contacts of a battery adapter that is connected to a charged power pack to simultaneously touch a piece of metal (coin or paper clip, for instance).
- **Do not** use any of the EPS System components if they have been damaged, if wires become exposed due to wear, or if the connector pins are bent or damaged in any way. Fire, shock, or other hazard may result.
- **Do not** remove the grounding prong of the AC adapter or use a 2-prong adapter with the AC adapter.
- **Do not** use an extension cord to provide power to the AC adapter.
- **Do not** place the cables where they may be subject to damage.
- **Do not** use tools, instruments, or excessive force to detach the power pack, battery adapter, or AC adapter connectors.
- **Do not** expose the EPS System components to rain, water, or moisture. Shock or other hazard may result.

- **Do not** immerse the EPS System components in liquid. Clean only with a damp cloth.
- **Do not** power the pump using the AC Adapter without the power pack (*except* the CADD-Prizm® pump).
- **Do not** use the AC adapter or any other component of the EPS System with any device or CADD® pump not previously specified. Use only products or components with the EPS System that are recommended by Smiths Medical MD, Inc.
- **Do not** use other AC adapters with the EPS System. Using AC adapters from other companies can damage the battery adapter, power pack, and the pump, and could be hazardous.
- **Do not** remove the cover or back of any part of the EPS System without specific written instructions from Smiths Medical MD, Inc. Except for the replacement battery, there are no user-serviceable parts.

Battery Maintenance

If the power pack shows signs of reduced capacity (for example, more frequent low battery alarms occur or run time is reduced), use the Battery Refresh Cycle feature to restore battery capacity. Normally, only one full cycle is needed; however, you may need to complete one or two additional cycles to fully restore battery capacity. You may also use the Battery Refresh Cycle periodically (for example, every 30 days) during use to maintain battery capacity. After using the Battery Refresh Cycle, recharging time will be extended.

To use the Battery Refresh Cycle

1. Attach the AC Adapter to the power pack INPUT connector. Plug the AC adapter into an AC wall outlet. Do not attach the power pack to a pump.

NOTE: The AC adapter must remain plugged into the wall outlet and power pack throughout the entire cycle.

2. Press the *Battery Refresh Cycle* button on the face of the power pack and place the power pack on a table. The amber light will flash while the battery is discharging.
3. When the power pack is completely discharged (approximately 8 hours for a fully charged battery), the amber light will stop flashing and will remain lit. The power pack will immediately begin recharging.
4. Allow the power pack to recharge until the ready (green) indicator light comes on.

System Specifications (Nominal)

General

Operating Temperature Range: +2°C to 40°C (36°F to 104°F).

Charging/Battery Refresh Cycle Temperature Range: 10°C to 35°C (50°F to 95°F). Because of the nature of rechargeable batteries, the power pack may not become charged if it is recharged at temperatures outside this range. Charging at these extreme temperatures may shorten the life of the batteries.

Storage Temperature Ranges:

Less than 30 days -20°C to 50°C (-4°F to 122°F)

30 to 90 days -20°C to 40°C (-4°F to 104°F)

Greater than 90 days -20°C to 30°C (-4°F to 86°F)

Humidity: 10% to 90% R.H. noncondensing.

Power Pack

Charging Time: Charge before each use until the ready (green) indicator light comes on (approximately 7 hours or less within the charging temperature range). Use the Battery Refresh Cycle: before first use; every 30 days during regular use; at least once every 6 months when in storage; if the battery shows signs of reduced capacity, or periodically during use (e.g. every 30 days). After using the Battery Refresh Cycle, recharging time will be extended. **NOTE:** It is not possible to overcharge the power pack.

CAUTION: Failure to recharge or refresh the battery during prolonged storage may cause deep battery discharge, leading to premature battery replacement in the power pack.

Input: 20–35 volts, 500 mA maximum, 10 w maximum.

Output: 10 volts DC during normal operating conditions and Low Battery Alarm condition; 5.6 volts DC during Low Battery Shutdown condition.

Low Battery Alarm: During a low battery condition, the power pack will emit an intermittent beep if connected to the battery adapter or CADD-Prizm® pump, and the amber LED will flash.

Low Battery Shutdown Sequence: CADD-Prizm® Pump

1. When the power pack reaches a low charge, either the pump sounds an alarm and displays a message, or the power pack begins beeping, or both.
2. The pump continues to function for approximately 30 minutes.
3. When the power pack reaches a depleted state, it can no longer support pump operation. The pump sounds an alarm, displays a message, and becomes powered by the 9-volt backup battery.

Low Battery Shutdown Sequence: All Other CADD® Pumps

1. The power pack begins beeping to alert the user that the internal battery has reached a low charge.
2. The pump continues to function for approximately 30 more minutes.
3. At the end of approximately 30 minutes, the power pack can no longer support the pump's operation. The power pack continues to beep. The pump begins a two-toned beeping, the words LO BAT appear on the pump display, and the pump ceases to operate.

The power pack will continue beeping until

- The power pack is connected to the AC adapter and the AC adapter is plugged into a wall outlet; or,
- The battery adapter is disconnected from the power pack or CADD-Prizm[®] pump; or,
- The internal battery is depleted to a voltage no longer capable of operating the power pack's circuitry.

NOTE: Depleting the power pack charge to a point where the low battery alarm no longer sounds may severely limit the performance of the power pack.

Size: 16.0 cm × 9.7 cm × 3.6 cm (6.3 in × 3.8 in × 1.4 in).

Weight: Approximately 625 g (22 oz).

Input Connector: 3-pin, integral, self-latching, female connector.

Output Cord: 30-cm (10-in), 3 conductor, shielded cable with 3-pin, in-line, self-latching, male connector with strain relief.

Battery: Replaceable nickel metal hydride battery. Instructions for changing the battery are provided with the replacement battery.

AC Adapter

Input: 105 to 130 volts AC; 57 to 63 Hz.

Output: Dual output. 10 volts DC at 300 mA; 24 volts DC at 500 mA.

Size: 8.5 cm × 6.8 cm × 5.6 cm (3.4 in × 2.7 in × 2.2 in).

Weight: 630 g (22 oz).

Output Cord: 2.7-m (9-ft), 24 ga/3 conductor, shielded cable, with 3-pin, in-line, self-latching, male connector with strain relief.

Battery Adapter

Size: 4.8 cm × 2.6 cm × 1.9 cm (1.9 in × 1.0 in × 0.75 in).

Weight: 25 g (0.9 oz).

Input Cord: 30-cm (10-in), 3 conductor, shielded cable, with 3-pin, in-line self-latching female connector with strain relief.

Output Connector: Two male 9-volt battery contacts.

Limited Warranty

Warranty: Smiths Medical MD, Inc. (“Manufacturer”) warrants to the Original Purchaser that all parts and components of the External Power Source (“EPS”) System that are manufactured by or for the Manufacturer (the “System”), excepting those items indicated below, shall be free from defects in materials and workmanship under normal use, if used in accordance with the EPS System Instructions for Use, for a period of one (1) year from the actual date of sale to the Original Purchaser. THERE ARE NO OTHER WARRANTIES.

Exceptions: This warranty does not cover normal wear and tear and maintenance items, and specifically excludes Medication Cassettes, extension sets, or any other accessory items or equipment used with the System. The nickel metal hydride (NiMH) rechargeable battery purchased either with the System at the time of its original purchase or as a subsequent replacement is subject to the terms of this Limited Warranty, but is warranted only for a period of ninety (90) days from the actual date of sale.

Warranty Procedures: Subject to the conditions of and upon compliance with this Limited Warranty, the Manufacturer will repair or replace at its option without charge (except for a minimal charge for postage and handling) any System (not including accessories) that is defective if a claim is made during such one-year period. DO NOT send any System or component in to the Manufacturer for warranty repair without specific forwarding information from the Customer Service Department.

Conditions: The following conditions, limitations and exclusions apply to the Manufacturer’s obligations under this warranty:

- A. **Voiding of Warranty:** This warranty is null and void if the System, or any part or component thereof, has been (1) repaired by someone other than the Manufacturer or its authorized agent; (2) altered so that its stability or reliability is affected; (3) misused; or, (4) damaged by negligence or accident. Misuse includes, but is not limited to, use not in compliance with the Instructions for Use of the System or use with non-approved accessories.
- B. **Limitations and Exclusions:** Repair or replacement of the System or any component part is the EXCLUSIVE remedy offered by the Manufacturer. All recommendations, information and descriptive literature supplied by the Manufacturer with respect to the System are believed to be accurate and reliable, but do not constitute warranties. No agent, representative, or employee of the Manufacturer

has authority to bind the Manufacturer to any representation or warranty, expressed or implied. THERE IS NO WARRANTY OF MERCHANTABILITY OR FITNESS OF THE SYSTEM FOR ANY PARTICULAR PURPOSE.

THE MANUFACTURER DISCLAIMS RESPONSIBILITY FOR THE SUITABILITY OF THE SYSTEM FOR A PARTICULAR MEDICAL TREATMENT OR FOR ANY MEDICAL COMPLICATIONS RESULTING FROM THE USE OF THE SYSTEM. THE MANUFACTURER SHALL NOT BE RESPONSIBLE FOR ANY INCIDENTAL DAMAGES OR CONSEQUENTIAL DAMAGES TO PROPERTY, LOSS OF PROFITS, OR LOSS OF USE CAUSED BY ANY DEFECT OR MALFUNCTION OF THE SYSTEM.

This warranty gives the Original Purchaser specific legal rights, and the Original Purchaser may have other legal rights that may vary from state to state.

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