



Universal DrillSaw Battery Charger

User's Guide

The *Arthrex Universal DrillSaw Battery Charger User's Guide* provides safety operation information for all components of the *Arthrex Universal DrillSaw Battery Charger*, including accessories. All operating personnel must read this User's Guide thoroughly prior to using this system and follow all safety warnings, cautions, and precautions.



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DFU-0256-5

Revision 0 07/2020

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AR-400UBC

This is not a warranty document. For all warranty information, including disclaimers, exclusions, terms, conditions and related provisions, refer to the "Arthrex U.S. Product Warranty" section of the Arthrex, Inc. website, found at www.arthrex.com whose provisions are incorporated herein by reference

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1.0 General Warnings and Safety Notices - Read This First

It is imperative that the symbols and conventions listed below be clearly understood. The *Universal DrillSaw Battery Charger User's Guide* identifies critical, important, and useful information using these symbols and conventions.

1.1 Important Safety Conventions

Users of this device are encouraged to contact their Arthrex representative if they require a more comprehensive surgical technique.

W A R N I N G !

The WARNING! label is the most important safety symbol. It identifies **critical** information that must be followed precisely to avoid injury or death.

1. Use this device only for purposes described in the User's Guide, under the supervision of a trained and licensed physician. This device should not be used by untrained personnel or used for indications other than those described in this User's Guide.
2. No modification of the charger (AR-400UBC) or accessories are allowed.
3. **DO NOT** open or attempt to service this system, as this may void your warranty. There are no user-serviceable parts inside. Removing the cover may introduce an electric shock hazard by exposing you to dangerously high voltages or other risks. If the system malfunctions, return it for service immediately.
4. Misuse, unauthorized assembly and modifications or repairs to the AR-400UBC system, or non-compliance with these instructions relieves Arthrex of all liability for claims under warranty or other claims.
5. **Use only** Arthrex approved accessories. Other accessories may result in increased emissions or decreased immunity of the system. Contact your Arthrex representative for a complete list of accessories. **DO NOT** modify any accessory. Failure to comply may result in injury to the patient and/or operating room staff.
6. Do not use in the presence of flammable anesthetics or oxidizing gases such as nitrous oxide, oxygen, or endogenous gases. All oxygen connections must be leak free for the duration of the surgical procedure.
7. Only use accessories which are in proper working order. Damaged or improperly functioning components must be sent in for service before use.
8. Before using the AR-400UBC for the first time, store it at room temperature for 24 hours.

9. The equipment is **NOT** suitable for use in potentially explosive atmospheres or with potentially explosive mixtures of anesthetic substances containing oxygen or nitrous oxide.
10. **DO NOT** use the system without a blank shipping cover or a charger cup present over each of the four charging bays, as this could introduce an electric shock hazard by exposing you to dangerously high voltages or other risks.



The PRECAUTION! symbol identifies methods and procedures that must be followed to avoid damaging the device or causing it to malfunction.

1. **DO NOT** – under any condition, or for any reason – open the **charger**, any system component, or any other system accessory.
 2. **Only use** replacement power cords that meet medical grade standards according to IEC 60320-1 Subclause 3.21, Detachable Power Supply Cords or electrical standards for the designated country where the AR-400UBC is being used. Contact your Arthrex representative for further information.
 3. This device has passed testing for EMI / RFI radiation and susceptibility, and EMC compatibility. This device may cause interference with other devices in the near vicinity if not set up, and used as instructed by Arthrex.
 4. **DO NOT** clean the device with abrasive cleaning or disinfectant compounds, solvents, or other materials that could scratch or damage the device.
 5. **Always** comply with the instructions issued by the manufacturer of disinfectant.
 6. NEVER use liquid to clean the accessory device connector contacts. Remove dust regularly with dry compressed air.
 7. Caution: Federal law restricts this device to sale by or on the order of a physician.
 8. This device is intended to be used by a trained medical professional
 9. Biohazard waste, such as explanted devices, needles and contaminated surgical equipment, should be safely disposed of in accordance with the institutions policy.
 10. Serious incidents should be reported to Arthrex Inc., or an in-country representative, and to the health authority where the incident occurred.
- Surgeons are advised to review the product-specific surgical technique prior to performing any surgery. Arthrex provides detailed surgical techniques in print, video, and electronic formats. The Arthrex website also provides detailed surgical technique information and demonstrations. Or, contact your Arthrex representative for an onsite demonstration.

- **In CE Accepting Countries:** Procedures carried out using these devices may be used on the general population.
- **In CE Accepting Countries:** The clinical benefits associated with the use of these devices outweigh the known clinical risks.
- **In CE Accepting Countries:** There are no unacceptable residual risks or uncertainties associated with the clinical use of these devices.

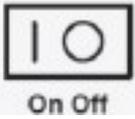
NOTE: This identifies information and training that can simplify the setup and operation of this device.

1. Read this User's Guide thoroughly before operating the device and save it for future reference. For additional information and training, contact your local Arthrex representative.
2. The AR-400UBC charger incorporates a universal AC input power supply. A voltage selection switch is not required.
3. AR-400UBC has been designed to accept EMC from other devices within the limitations as described in section 13.0

1.2 Symbols Definition

	Safety Sign Follow operating instructions
	Non sterile
	Caution
	Keep dry
	Electrical hazard, dangerous voltages are present. Never attempt to repair the equipment. Only trained service personnel may remove the cover, or obtain access to system components.
	Authorized representative in the European Community
	Serial number
	Electrical waste

R_x ONLY	Caution: Federal law restricts this device to sale by or on the order of a physician.
	Fragile, handle with care
	This side up
	Temperature limits for storage and transport
	Atmospheric pressure limitation for storage and transport
	Humidity limits for storage and transport
	Manufacturer
	Date of manufacture; year and month.

REF	Catalog number	CE 2797	The product meets the essential requirements of Medical Device Directive 93/42/EEC
QTY <input style="width: 40px; height: 20px;" type="text"/>	Quantity		Do not use if package is damaged
	On/Off Symbol		Protective Earth

- All of the symbols used on the labeling along with the title, description and standard designation number may be found on our website at www.arthrex.com/symbolsglossary.

1.3 Shipping, Unpacking, and Warranty Information

Carefully unpack and inspect all components for shipping damage.



Any damage could compromise patient safety and should be reported immediately to Arthrex or any authorized Arthrex distributor. The warranty could be voided if shipping or first-installation damage is not reported within seven business days of receiving the device. Refer also to our General Terms of Business.

Please visit Arthrex.com for warranty information.

2.0 Product Description and Intended Use

2.1 Product Description

The Arthrex *Universal DrillSaw Battery Charger* is classified as a FDA Class I medical device.

The Arthrex *Universal DrillSaw Battery Charger* is designed to charge the following Arthrex batteries

- AR-300L
- AR-400UB
- AR-400SB
- AR-600L

A detachable power cord is used to provide power to the charger.

The charger is activated by a switch.

The front panel display is a touch screen, back lit LCD display that is used to select and provides a means for charging status of the battery, and status/warning/caution indicators of batteries health status.

The AR-400UBC Universal DrillSaw Battery Charger, Applied Parts and Accessories:

- AR-400UBC *Universal DrillSaw Battery Charger*
- Charging bays (Sold separately):
 - AR-400UBC-4 – Charging Bay for AR-400UB batteries
 - AR-400UBC-S4 – Charging Bay for AR-400SB batteries
 - AR-400UBC-3 – Charging Bay for AR-300L & AR-600L batteries
- Power Cord

2.2 Intended Use

The Universal DrillSaw Battery Charger is intended exclusively for charging AR-300L, AR-600L, AR400SB and AR-400UB rechargeable batteries.

2.3 Contraindications

The AR-400UBC is contraindicated in any procedure where a conductive solution is used.

Specifically:

- use by unskilled/untrained personnel
- disregarding the intended use

Only use Arthrex accessories described in this User's Guide.

W A R N I N G !

Misuse may damage the AR-400UBC and cause risks and hazards for patients, users and third parties.

W A R N I N G !

This device is only for use under the supervision of a trained and licensed physician. This device should not be used by untrained personnel or used for indications other than those described in this User's Guide.

2.4 Product Features

2.4.1 AR-400UBC Universal DrillSaw Battery Charger – Front View

Figure 1 shows the front panel of the AR-400UBC. The features are identified in Table 1 below.

Figure 1 Front Panel of the Charger

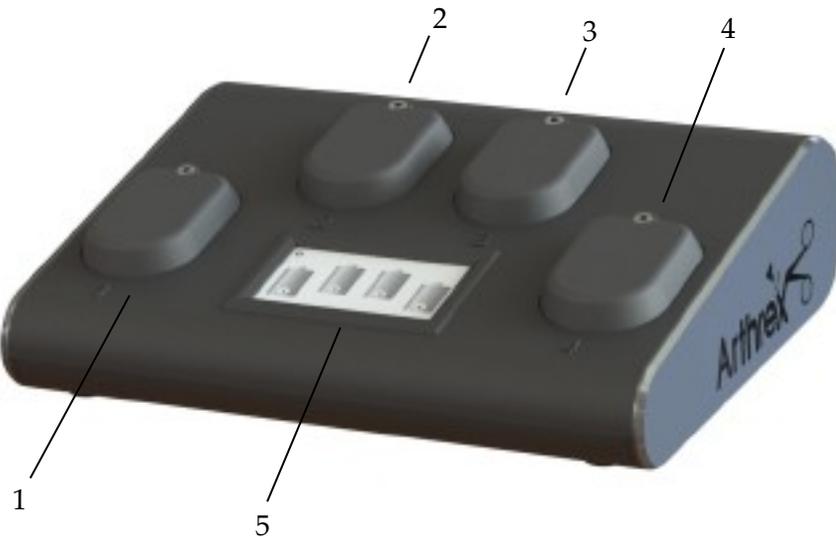


Table 1 Front Panel of the Charger

1.	Charging bay No.1
2.	Charging bay No.2
3.	Charging bay No.3
4.	Charging bay No.4
5.	Touch Screen Display

2.4.2 AR-400UBC Universal DrillSaw Battery Charger – Rear View

Figure 2 shows the rear panel of the AR-400UBC. The features are identified in Table 2 below.

Figure 2 Rear Panel of the Charger

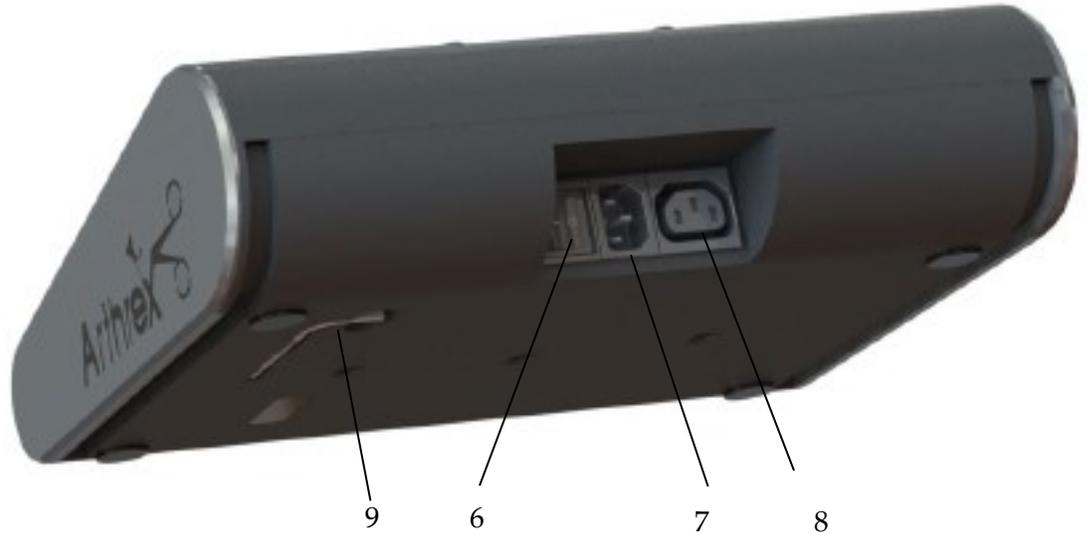


Table 2 Rear Panel of the Charger

6.	ON/ OFF Power Switch
7.	Supply main input Plug
8.	Supply main output to connect a second charger to an existing charger
9.	Hex-wrench

2.4.3 AR-400UBC Display Messages

The Touch Screen Display [Figure 1] provides information about the status of the AR-400UBC charging status in real time. A list of informational and error messages is shown in Table 3 below. Messages shaded in gray denote that Arthrex technical support should be contacted for further instructions.

Table 3 AR-400UBC Display Messages

Charger Error Codes	Cause	Solution	AR-300L AR-600L	AR-400UB AR-400SB
01	Open Charge Power Path or Short Circuit Power Path	Recommend retry charging the battery. If the fault repeats, the battery needs to be replaced.	x	x
02	Battery failed to communicate	Recommend retry charging the battery. If the fault repeats, replace the battery.		x
03	Charge time out exceeded (120 minutes)	Make note of the fault and retry charging the battery. If the fault repeats replace the battery.	x	x
04	Battery Identification incorrect or Battery severely discharge	Battery should not be used. Replace the battery.	x	x
05	Battery too cold or hot	Wait until the battery temperature adjusts and recommend retry charging the battery	x	x
06	Charger communication to the battery has repeatedly failed	Recommend retry charging the battery. If the fault repeats, replace the battery.		x
07	Battery has a permanent fault	Battery should not be used. Replace the battery.		x
08	Battery health below 70% of design capacity	Battery will not charge, and needs to be replaced.		x

2.4.4 AR-400UBC-4 Charging Bay (black color) for AR-400UB Batteries

Figure 3 shows the Charging bay for the AR-400UB Battery Pack. The features are identified in Table 4 below.

Figure 3 Charging Bay for AR-400UB Batteries

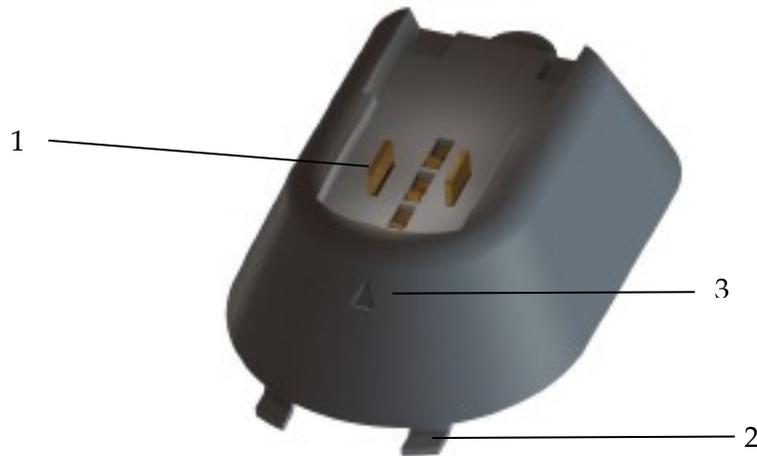


Table 4 Elements of the Charging Bay for AR-400UB Batteries

1.	Battery contact
2.	Alignment tabs for connecting to the charger
3.	Alignment arrow for the AR-400 battery pack

2.4.5 AR-400UBC-S4 Charging Bay (gray color) for AR-400SB

Figure 4 shows the Charging bay for the AR-400SB Sterilizable Battery Pack. The features are identified in Table 4 below.

Figure 4 Charging Bay for AR-400SB Sterilizable Batteries

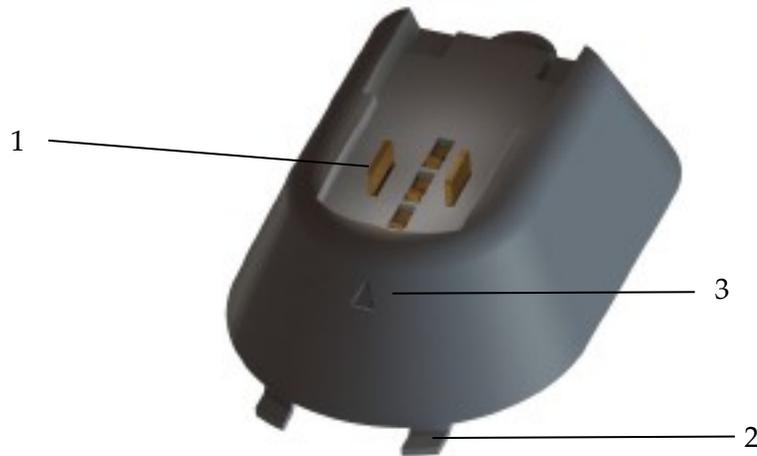


Table 5 Elements of the Charging Bay for AR-400UB Batteries

1.	Battery contact
2.	Alignment tabs for connecting to the charger
3.	Alignment arrow for the AR-400 battery pack

2.4.6 AR-400UBC-3 Charging Bay for AR-300 and AR-600 Batteries

Figure 5 shows the Charging bay for AR-300L and AR-600L Battery Packs. The features and symbols are identified in Table 5 below.

Figure 5 Charging Bay for AR-300 and AR-600 Batteries

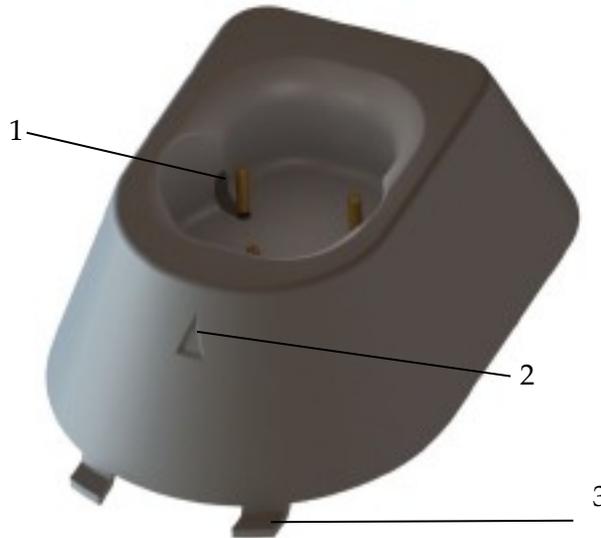


Table 6 Elements of the Charging Bay for AR-300L & AR-600L Batteries

- | | |
|----|-------------------------------------------------------|
| 1. | Battery contact |
| 2. | Alignment arrow for AR-300L and AR-600L battery packs |
| 3. | Alignment tabs for connecting to the charger |

3.0 Technical Specifications

3.1 Charger

Table 7 AR-400UBC Charger

Width	330 mm (13 in.)
Height	100 mm (4 in.)
Depth	280 mm (11 in.)
Weight	2.65 kg (5.9 lbs.)
Water protection	IP30
AC Input	100-240V~, 50/60Hz, 3 A, Class I
DC Output	12,45V +/-0.5%
Mains Fuse	5A (Non-Replaceable)
Power	250W
Pollution Level	2
Altitude	4,500 m (15,000 ft)
Overvoltage Category	II

Table 8 Ambient conditions for Operation

Temperature	0° to 35 °C (32° to 95 °F)
Relative Humidity	0% to 85% (relative), non-condensing
Air Pressure	700 hPa to 1020 hPa (21 in. Hg to 30.12 in. Hg)

Table 9 Ambient conditions for Storage

Temperature	-20° to +60°C (-4° to 140°F)
Relative Humidity	10% to 85% (relative), non-condensing
Air Pressure	500 hPa to 1020 hPa (15 in. Hg to 30.12 in. Hg)

3.2 Safety, EMC, and Regulatory Requirements

Table 10 Safety, EMC, and Regulatory Requirements

Parameter	Parameter Value	
System Classification	IEC 60601-1	Class I (protection against electric shock)
	FDA class	Class I medical device (non-sterile)
	EU class	Class IIa
	Health Canada Class	Class II
Safety Certifications	Domestic Certification	ANSI/AAMI ES60601-1 (2005+C2+A2)
	Canadian Certification	CSA C22.2 No 60601.1 (2008)
	EU Certification	EN/IEC 60601-1: 2005 + A1:2012
EMC Certifications	EMC Certification	IEC 60601-1-2: 2014-02
Safety Certification Marking	UL	
CE Classification MDD93/42/EEC	Annex IX Rule 9	Class IIa

For all other accessories refer to accompanying DFUs for more information. Refer to Section 13.0 Electromagnetic Emissions for further details on EMC certification.

3.3 Electromagnetic Compatibility (EMC)



This device has passed testing for EMI/RFI radiation and susceptibility and EMC compatibility. This device may cause interference with other devices in the near vicinity if not set up and used as instructed by Arthrex.

The AR-400UBC has been designed to accept EMC from other devices within the limitations as described in section 13.0.

Try to correct the interference by following one or more of these measures:

1. Reorient or relocate the receiving device.
2. Increase the distance between the devices.
3. Connect the device to an outlet on a different circuit than the other device(s) are connected to.
4. Consult the manufacturer or field service technician for the receiving device for guidance.

3.4 Risks Due to Electromagnetic Fields:

The functionality of implantable systems, such as cardiac pacemakers and ICD (implantable cardioverter defibrillator) can be affected by electric, magnetic and electromagnetic fields.

1. Consider the application and find out if patient or user has any of these devices, before using the product.
2. Weigh the risks and benefits.
3. Keep the product away from any of these devices.
4. Make appropriate emergency provisions and take immediate action upon any signs of health issues.
5. Symptoms such as raised heartbeat, irregular pulse and dizziness can be signs of a problem with a cardiac pacemaker or ICD.

4.0 Setup

Note: Users may contact their Arthrex representative if they require clarification on the Setup instructions described below.

4.1 AC Power Safety Considerations

The AR-400UBC is powered by a medically rated universal AC input switching power supply. This power supply allows users to connect the charger to any local AC mains outlet.

Arthrex supplies separate region specific power cords (Hospital grade and EU) with the AR-400UBC. Contact your Arthrex representative if you need a power cord that must meet the electrical standards of another country.



Only use replacement power cords that comply with medical grade standards, IEC 60320-1 Subclause 3.21, Detachable Power Supply Cords or electrical standards for the designated country where the AR-400UBC is being used.



Avoid positioning the unit so that it is difficult to disconnect the coupler or plug from the supply main.

To prevent electrical shock, do not use extension cords or 2 to 3 pronged adaptors.

The charger has an AC mains switch on the rear panel. When the supply main switch is OFF, no electrical power is used by the charger.

Two chargers may be connected via a flex cable provided. No more than two chargers may be connected in this way, otherwise the permitted electrical load values may be exceeded and it could damage the units.

When the supply main switch is ON, the charger executes a series of self-diagnostic tests. Upon successful completion of these tests, the charger will display the name and model number. If the tests discover a problem, the problem is shown on the display. Refer to Table 3 for a listing of AR-400UBC Display messages.

W A R N I N G !

To avoid the RISK of electric shock, this equipment must only be connected to a SUPPLY MAIN with Protective Earth Terminal.

4.2 Basic Setup Procedure for the AR-400UBC Charger

NOTE: Section 5.0, Operation, explains how to use the charger.

NOTE: See Section 4.3 for specific assembly instructions.

1. Place the AR-400UBC on a flat, dry surface.
2. Connect the receiver end of the power cord for the AR-400UBC into the AC socket and the plug end to the facility AC mains supply.
3. Install the charging bay.
4. Power ON charger.
5. Allow the charger to fully initialize.

All charger bays can be used simultaneously, with any combination of battery types.

The charging process starts automatically, once the battery types have been identified. The orange battery symbol display lights up and starts blinking. This symbol may be green, depending on the level of charge that the battery has when placed on the charger.

Depending on the charge status and type of battery, it can take as little as 15 minutes to charge a battery.

Once the battery is fully charged, the green battery symbol will be completely filled. The charger then switches to a maintenance charge. The battery may be left on the charger until it's needed. Leave the device powered on, to ensure that the battery is always fully charged.

If the battery is removed from the charger before the green display lights up completely, it will not be fully charged.

W A R N I N G !

Use only Arthrex approved accessories. Other accessories may result in increased emissions or decreased immunity of the system. Contact your Arthrex representative for a complete list of accessories. DO NOT modify any accessory. Failure to comply may result in patient and/or operating room staff injury.

W A R N I N G !

Do not use in the presence of flammable anesthetics or oxidizing gases such as nitrous oxide, oxygen, or endogenous gases. All oxygen connections must be leak free for the duration of the surgical procedure.

4.3 Setup - Installing a Charging Bay

These instructions describe how to install charging bay(s)

Figure 6 **Install a Charging Bay**

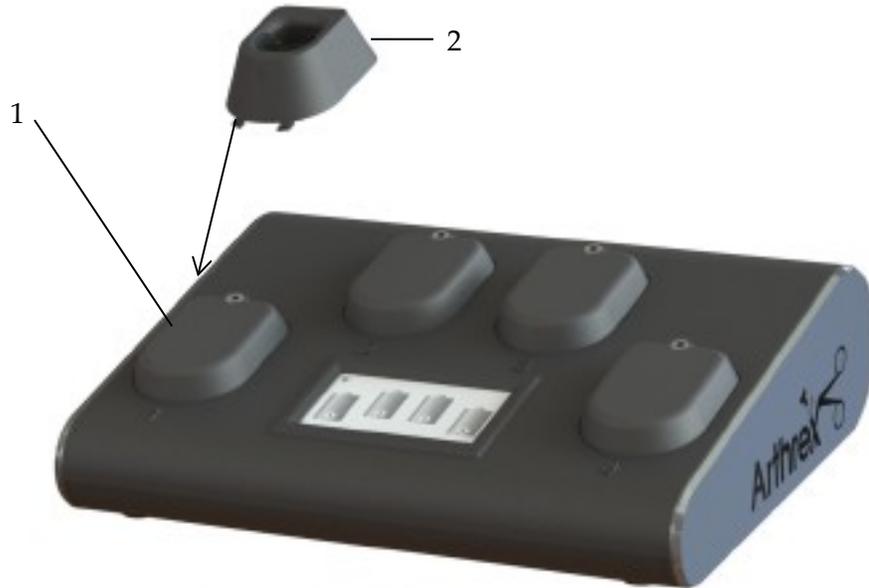


Table 11 **Install a Charging Bay**

1. With the power off, using the hex-wrench provided on the bottom of the charger, remove the securement screw and the protective bay cap used during shipping.

2. Hold the charging bay at a slight angle and insert the 2 alignment tabs on the charging bay with the two openings on the charging port that is exposed when you removed the protective cap.

Once the tabs are aligned in the provided holes, press down gently to engage the electronic plug connection.

Using the hex-wrench secure the charging bay to the charger (turn the screw until it is firmly in place, being careful not to strip the screw threads). Batteries are now ready to be placed on the charger for charging.

4.4 Setup – Battery Installation and Removal

These instructions describe how to install/remove batteries to the charger:

Figure 7 Battery Attachment and Removal:

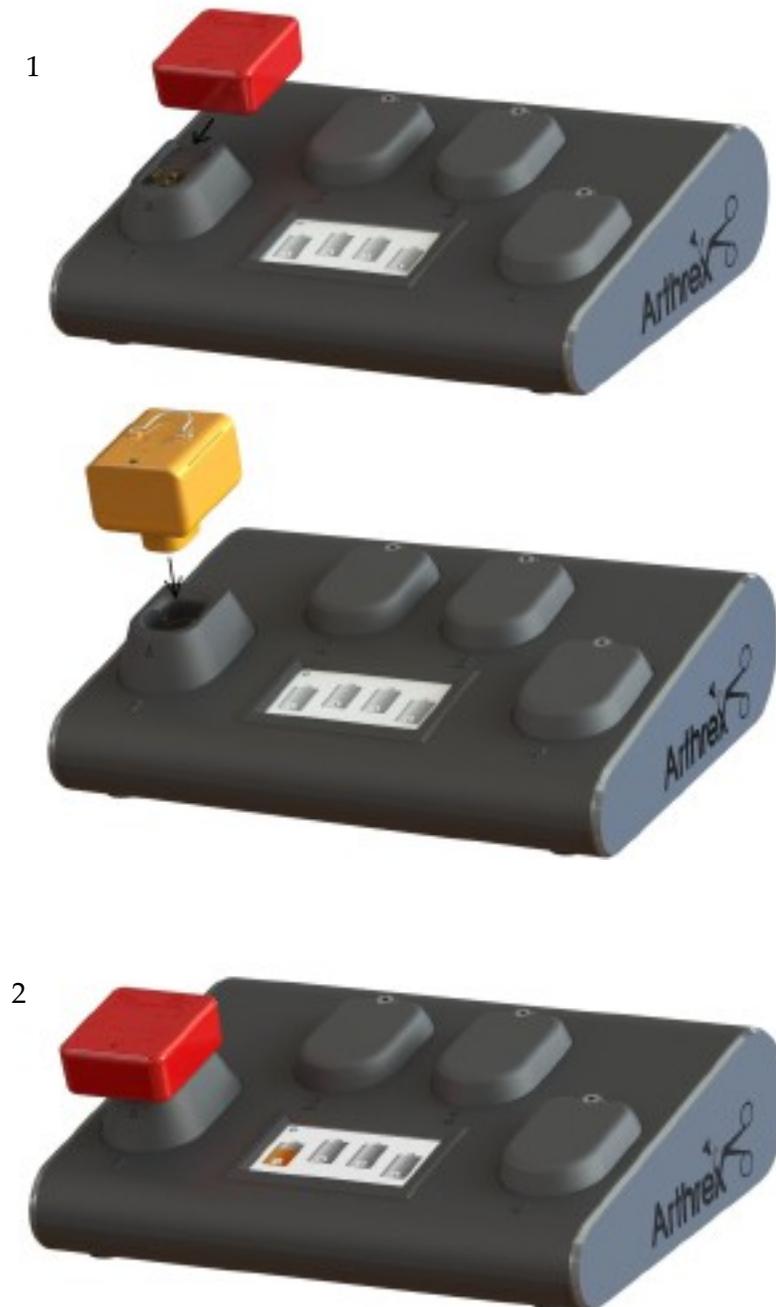




Table 12 **Battery Attachment and Removal**

1. These pictures represent how to insert a battery onto a charging bay. The black arrows indicate the direction of insertion.
Note: AR-300L batteries are placed on the charger in the same manner as the AR-600L batteries.

 2. These pictures represent a battery that has been fully engaged on the charging bay.
Note: The Charger should recognize the battery and visually indicate charging via the display screen within a few seconds.
-

5.0 Operation and Frequently Used Functions

Users of this device should contact their Arthrex representative if they require more comprehensive assistance.

5.1 Main Screen

NOTE: If the light doesn't appear within 5 seconds, the charger did not identify the battery. Remove the battery and replace it on the charger. If this does not correct the issue, contact Arthrex Customer Support for instructions.

Figure 7 Main Screen Display



Table 13 Touch Screen Display Elements

1.	Example of the screen layout
2.	Example of the orange light that will appear while the battery is charging. If you press this icon while it is orange, it will give you additional information about the battery (only for AR-400UB).
3.	Example of the green light that will appear when charging is complete. If you press this icon while it is green, it will give you additional information about the battery (only for AR-400UB).
4.	Example of the red light and symbol that will appear when an error has occurred. Press the red icon for the sub-screen that will give you the error code. Refer to Table 3 in Section 2.4.3 for instructions on how to correct the error.
5.	MENU Button –This button allows access to various settings and defaults. See Figure 8 in Section 5.2 .

5.2 Options Screen Display

The Options Screen provides access to settings and information screens.

Figure 8 Options Screen Display

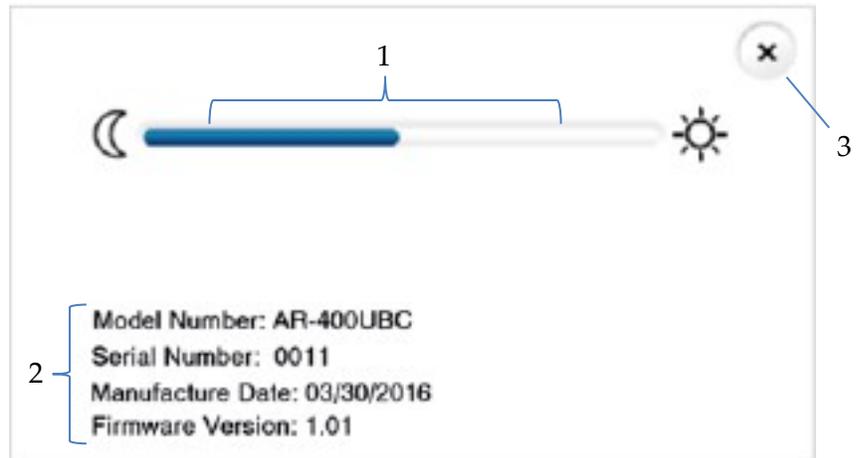


Table 14 Options Screen Display

- | | |
|----|--------------------------------------------------------------------------------|
| 1. | Brightness adjustment. |
| 2. | Model, Serial Number, Manufacture Date, and Firmware Version for each charger. |
| 3. | Exit Button. When pressed, the software returns to the Menu screen. |

5.3 Cycle Screen Display (Only available for AR-400 Batteries)

The Cycle Screen provides information about the numbers of charging cycles .

Figure 9 Cycle Screen Display

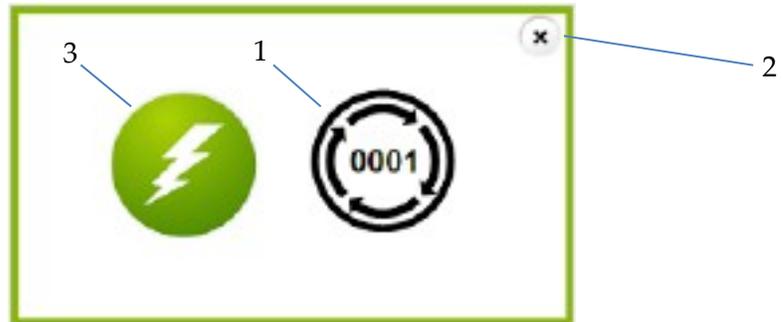


Table 15 Options Screen Display

- | | |
|----|-----------------------------------------------------------------------------------------------|
| 1. | Number of charging cycles for the battery being charged (only available for AR-400 Batteries) |
| 2. | Exit Button - returns the user to the charging screen. |
| 3. | State of capacity icon. Green means the battery has enough capacity. |

5.4 Error Code Screen Display

The Error Code Screen provides information about the error type.

Figure 10 Error Code Screen Display

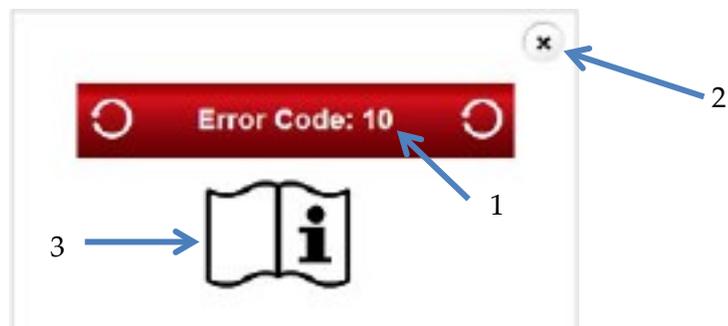


Table 16 Error Code Screen Display

- | | |
|----|----------------------------------------------------------------------------|
| 1. | Displays the error code listed in Table 3 of Section 2.4.3 . |
| 2. | Exit Button - returns the user to the charging screen. |
| 3. | Information icon – refers you to this User's Guide for instructions. |

6.0 Cleaning and Disinfecting

6.1 Charger AR-400UBC

The AR-400UBC charger is provided non-sterile and should not be sterilized. The AR-400UBC charger must be adequately cleaned and disinfected prior to use or re-use.

The AR-400UBC must not be immersed in any liquid.

Always place the Main Power switch to the "Off position" and disconnect the power before cleaning and disinfecting the AR-400UBC charger.

To clean and disinfect:

1. Using a disinfecting towelette or a low-linting cloth dipped in disinfectant solution, gently wipe down all surfaces of gross contamination.
2. Using a second (fresh) towelette or cloth, thoroughly wet the surface and ensure it remains visibly wet for the contact time recommended by the disinfectant manufacturer. The use of additional towelettes or cloths may be used to ensure the surface remains visibly wet for the entire contact time.
3. If required by the disinfectant manufacturer, rinse per instructions; otherwise, allow to air dry.
4. Inspect for visual cleanliness and ensure there is no remaining gross contamination. If gross contamination remains, repeat the procedure and re-inspect.



Always comply with the instructions issued by the manufacturer of the cleaning and/or disinfectant regarding concentration, exposure times, temperature and material compatibility.



NEVER clean the charging contacts with liquid cleaners. If there is dust, remove with dry compressed air.



DO NOT clean the device with abrasive cleaning or disinfectant compounds, solvents, or other materials that could scratch or damage the device.



DO NOT clean the device without a cover or charging cup present on the charging bays.

7.0 Sterilization

The charger and charging cups may not be sterilized, they can only be disinfected. Follow the cleaning and disinfecting guidelines in Section 6.0.

7.1 Transmissible Spongiform Encephalopathy Agents

It is outside the scope of this document to describe in detail the precautions that should be taken for Transmissible Spongiform Encephalopathy (TSE) Agents.

The agents for transmission of Creutzfeldt-Jakob disease are believed to be resistant to normal disinfection and sterilization processes. Therefore, the normal processing methods of decontamination and sterilization as described above may not be appropriate where CJD transmission is a risk.

In general, the tissues that come into contact with orthopedic surgical instruments are those of low TSE infectivity. However, take particular precautions when handling instruments that have been used on known, suspected, or at-risk patients. Refer to AAMI ST79 for further information.

8.0 Maintenance

Regular and proper maintenance of your Universal DrillSaw Battery Charger is the best way to protect your investment and avoid non-warranty repairs.

Recommended care and handling of the charger includes proper day-to-day operation, cleaning, and disinfection which are extremely important to ensure safe and efficient operation. It is important to visually inspect the charger before each use.

Your authorized Arthrex service department is extremely knowledgeable about the charger and will provide professional service. Any services and/or repairs carried out by any unauthorized repair facility may result in reduced performance of the instruments or instrument failure and could void the warranty.

8.1 Periodic Maintenance

The product should be inspected prior to and after each use to ensure that the charger and accessories are not damaged or worn. If it becomes necessary to return the charger to Arthrex for service, please disinfect the unit before shipping.

9.0 Technical Support

For assistance in using the products identified in this User's Guide, contact an Arthrex representative or contact the **Arthrex Technical Support Hotline** at 1-(888) 420-9393, Monday through Friday from 9:00 AM to 5:00 PM EST; or at +49 89 90 90 05 8800 or techsupport@arthrex.de from 8:00 AM to 5:00 PM CET.

9.1 Additional Technical Information

Contact your Arthrex representative if you require more comprehensive technical information. Other information will be provided upon request by Arthrex Approved Service Personnel.

10.0 Troubleshooting

Refer to Table 16 for device troubleshooting if problems occur after cleaning, transporting, or changing operating staff.

Table 17 Troubleshooting: Faults, their Causes, and Solutions

Problem	Cause	Recommended Action(s)
Unit does not power on.	<ol style="list-style-type: none"> 1. On/Off switch is not in the correct position. 2. Not receiving power from the wall receptacle or the power strip. 3. Charger has an internal power failure. 	<ol style="list-style-type: none"> 1. Check the power On/Off switch. 2. Check the main power plug and wall receptacle. 3. Return to Arthrex for repairs.
Charging cups do not engage correctly or it is not recognizing the battery(s).	<ol style="list-style-type: none"> 1. Bent connector, or interference due to material in-between the cup and charger. 2. Charging bay is not secured completely. 3. Charger has an internal charging bay error. 	Detach the charger cup from the charger and: <ol style="list-style-type: none"> 1. Check the charging cup and mating charger connector for signs of bent pins or loose material that could interfere with mating. 2. Attempt to reattach the cup to the charger, or attempt to reattach the cup in an alternate bay. 3. Return to Arthrex for repairs.
LCD screen image issues or touch screen is not functional	<ol style="list-style-type: none"> 1. Temporary software issue. 2. Charger has an internal connection or hardware error. 	<ol style="list-style-type: none"> 1. Cycle the power off/on and check again. 2. Return to Arthrex for repairs.
Charging cup is not recognizing battery(s)	<ol style="list-style-type: none"> 1. Bent contacts in charging cup. 2. Foreign object in charging cup. 	<ol style="list-style-type: none"> 1. Check the charging cup for signs of bent pins or loose material that could interfere with mating. 2. Check the charging cup for loose material. 3. Return to Arthrex for repairs.
Brightness level doesn't remain at the set brightness	<ol style="list-style-type: none"> 1. Brightness setting is saved upon exiting the configuration screen. 	<ol style="list-style-type: none"> 1. Exit the configuration screen, before power cycling the charger.
Charger surface is very warm	<ol style="list-style-type: none"> 1. Vent holes are blocked. 	<ol style="list-style-type: none"> 1. Ensure charger is sitting on a hard flat surface with no objects preventing proper airflow at the bottom of the charger.
Touch screen is not responsive, or is intermittent	<ol style="list-style-type: none"> 1. The charger uses a resistive touch screen, capable of working with gloved hands. As a resistive touch screen, the screen must be physically pressed, not just touched. 	<ol style="list-style-type: none"> 1. Press the screen firmly. 2. Cycle the power On/Off button and check again. 3. Return to Arthrex for repairs.

If the problems persist, clean and disinfect the Universal DrillSaw Battery Charger and send it to Arthrex using the original packaging when possible. Please enclose a brief explanation of the malfunction detected, along with any charging bay cups that were used when the problem occurred.

11.0 Repair Policy

Contact Arthrex for a return authorization number and instructions prior to returning the device.

12.0 End of Life, Environmental Directives

WEEE Directive [2002/96/EC] on Waste Electrical and Electronic Equipment



The Directive on Waste Electrical and Electronic Equipment obliges manufacturers, importers, and/or distributors of electronic equipment to provide for recycling of the electronic equipment at the end of its useful life.

Do not dispose of WEEE in unsorted municipal waste.

The WEEE symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of Waste Electrical and Electronic Equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your medical electronic equipment at the end of its useful life for recycling, please contact Arthrex Customer Service Department.

13.0 Electromagnetic Emissions

Table 18 Guidance and Manufacturer's Declaration - Electromagnetic Emissions

The Universal DrillSaw Battery Charger is intended for use in the electromagnetic environment specified below. The customer or the user of the Universal DrillSaw Battery Charger System should ensure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Class A	The Universal DrillSaw Battery Charger uses RF energy only for its internal function. Therefore its RF emissions are very low and not likely to cause any interference with nearby electronic equipment.
RF emissions CISPR 11	Class A	The Universal DrillSaw Battery Charger is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Complies	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Table 19 Guidance and Manufacturer's Statement - Electromagnetic Immunity

The Universal DrillSaw Battery *Charger* is intended for use in the electromagnetic environment specified below. The customer or the user of Universal DrillSaw Battery Charger should ensure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV contact ± 15 kV air	± 8 kV contact ± 15 kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions, and voltage variations on power supply input lines IEC 61000-4-11	0 % U_{τ} (100 % dip in U_{τ}) for 0.5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 70 % U_{τ} (30 % dip in U_{τ}) for 25 cycles 0 % U_{τ} (100 % dip in U_{τ}) for 5 sec	0 % U_{τ} (100 % dip in U_{τ}) for 0.5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 70 % U_{τ} (30 % dip in U_{τ}) for 25 cycles 0 % U_{τ} (100 % dip in U_{τ}) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the Universal DrillSaw Battery Charger requires continued operation during power mains interruptions, it is recommended that the Universal DrillSaw Battery Charger be powered from an uninterruptible power supply.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note: UT is the AC mains voltage prior to application of the test level.			

Table 20 Guidance and Manufacturer's Statement - Electromagnetic Immunity (cont'd)

The Universal DrillSaw Battery Charger is intended for use in the electromagnetic environment specified below. The customer or the user of the Universal DrillSaw Battery Charger should ensure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz 6Vrms for ISM bands	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the Model AR-400UBC, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = [3.5 / V1] \sqrt{P} = 1.2 \sqrt{P}$ $d = [3.5 / V1] \sqrt{P} = 1.2 \sqrt{P}$ 80 MHz to 800 MHz $d = [7 / E1] \sqrt{P} = 2.3 \sqrt{P}$ 800 MHz to 2.5 GHz
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.7 GHz 27 V/m 385 MHz 28 V/m	3 V/m	Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey ^a should be less than the compliance level in each frequency range. ^b Interference may occur in the vicinity of equipment marked with the following symbol: 

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
	450MHz 9 V/m 710/745/780 MHz 28 V/m 810/870/930 MHz 28 V/m 1720/1845/1970 MHz 28 V/m 2450 MHz 9 V/m 5340/5500/5785 Mhz		
<p>NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.</p> <p>NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</p>			
<p>a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Model AR-400UBC is used exceeds the applicable RF compliance level above, the Model AR-400UBC should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Model AR-400UBC</p> <p>b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.</p>			

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