

STAGESPOWER

USERGUIDE



Stages Cycling™ LLC
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1-800-778-7218

Offices:

Sales, Accounting and Administrative: 1732 NW Quimby, Ste 250, Portland, OR 97209

Design, Manufacturing and Tech. Support: 3090 Sterling Cir, Ste 102, Boulder, CO 80301

Specifications

- Battery CR2032 – service life, approximately 200 hours
- Wireless transmission: 2.4GHz, ANT+™ and Bluetooth® Smart (4.0)
- Accuracy: +/-2% of measured power
- Weight: adds only 20g to weight of left crank arm
- Power measurement range: (watts): 0 – 1999
- Cadence range (RPM): 30-220
- Water resistance rating: IPX8



This product is ANT+ certified and complies with the following specified ANT+ Device Profiles:



Training with a power meter is the best way to guarantee improvements in your functional threshold power, overall fitness and of course speed. We all want to ride faster with less effort and using a power meter will help you to determine your strengths and weaknesses, create the proper training zones and easily understand your progress. As the co-author of “Training and Racing with a Power Meter”, I have written extensively on the subject of power training and coached some of the best riders in the world to greater success using the principles of power training. Training with your new power meter puts you in charge of the training stress that you need to create in order to help you adapt, get stronger and ultimately achieve your cycling dream goals.

Hunter Allen

Founder-Peaks Coaching Group

Co-developer- TrainingPeaks WKO+ power analysis software

Co-author- Training and Racing with a Power meter.

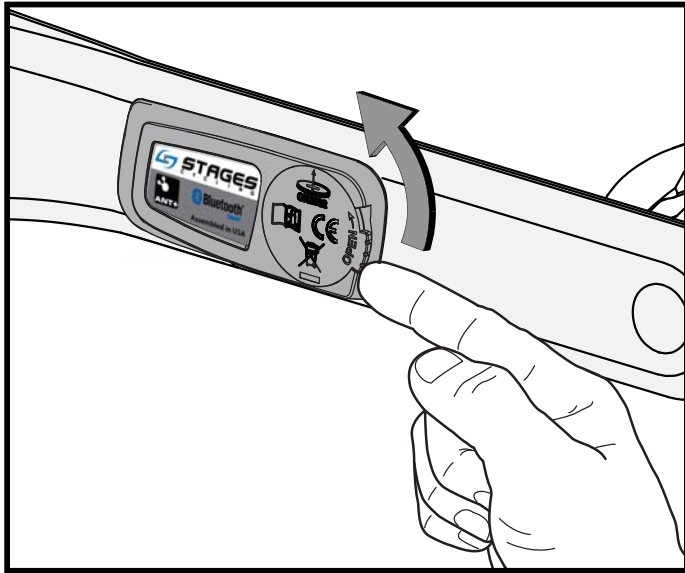


FIG 1

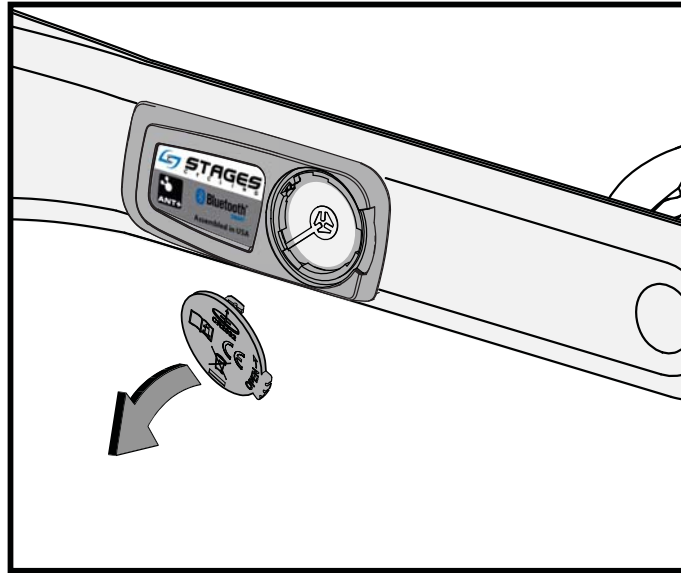


FIG 2

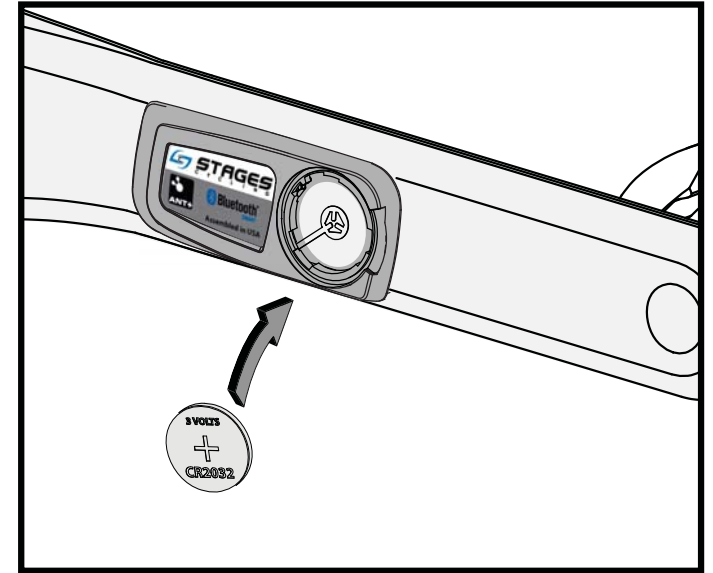


FIG 3

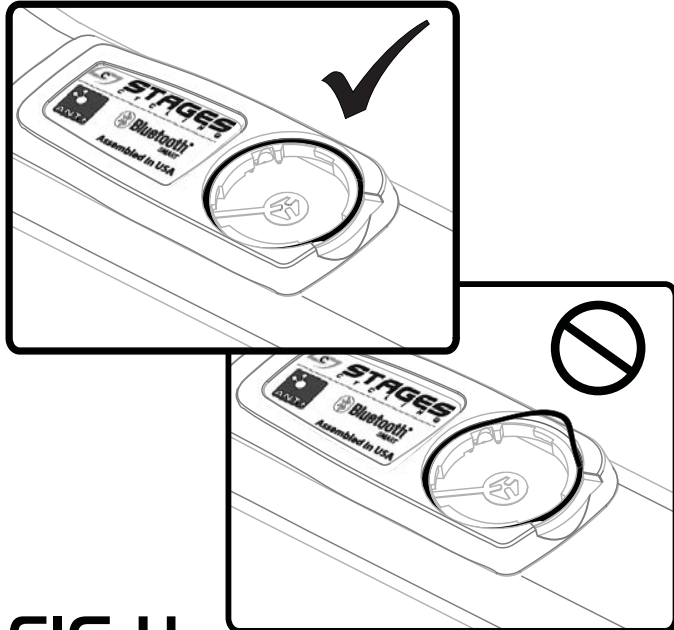


FIG 4

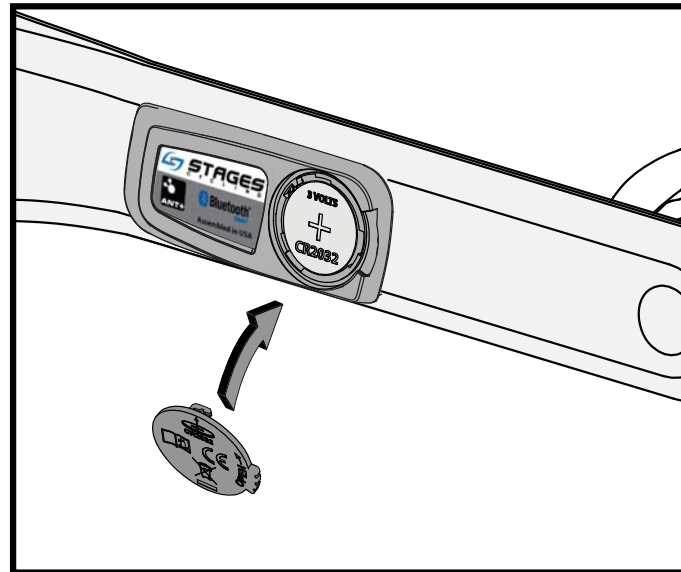


FIG 5

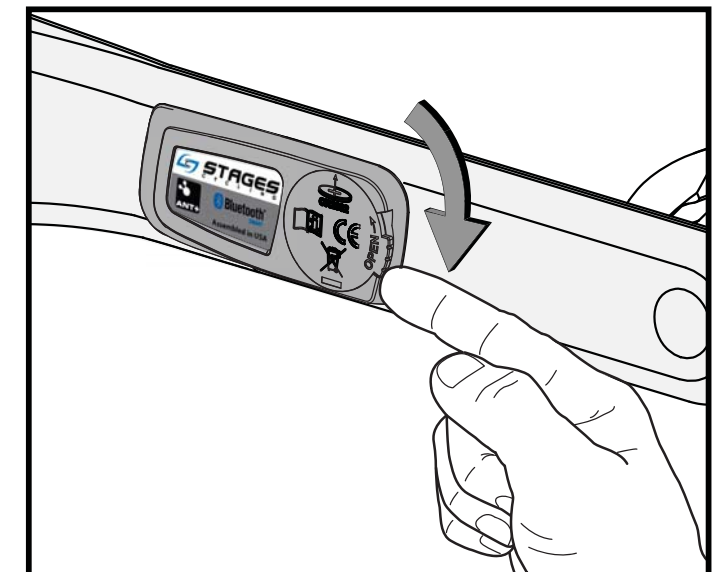


FIG 6

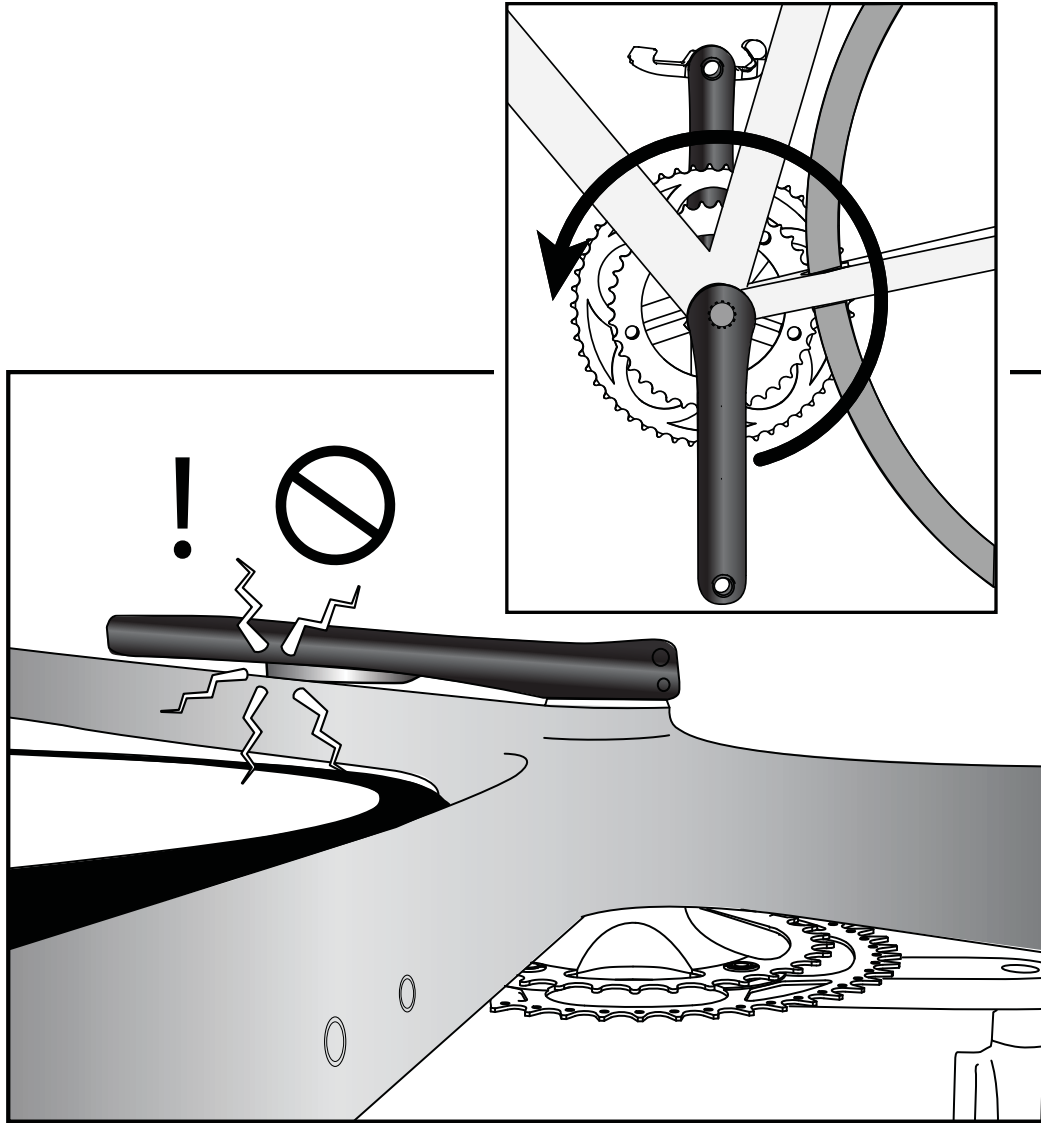


FIG 7

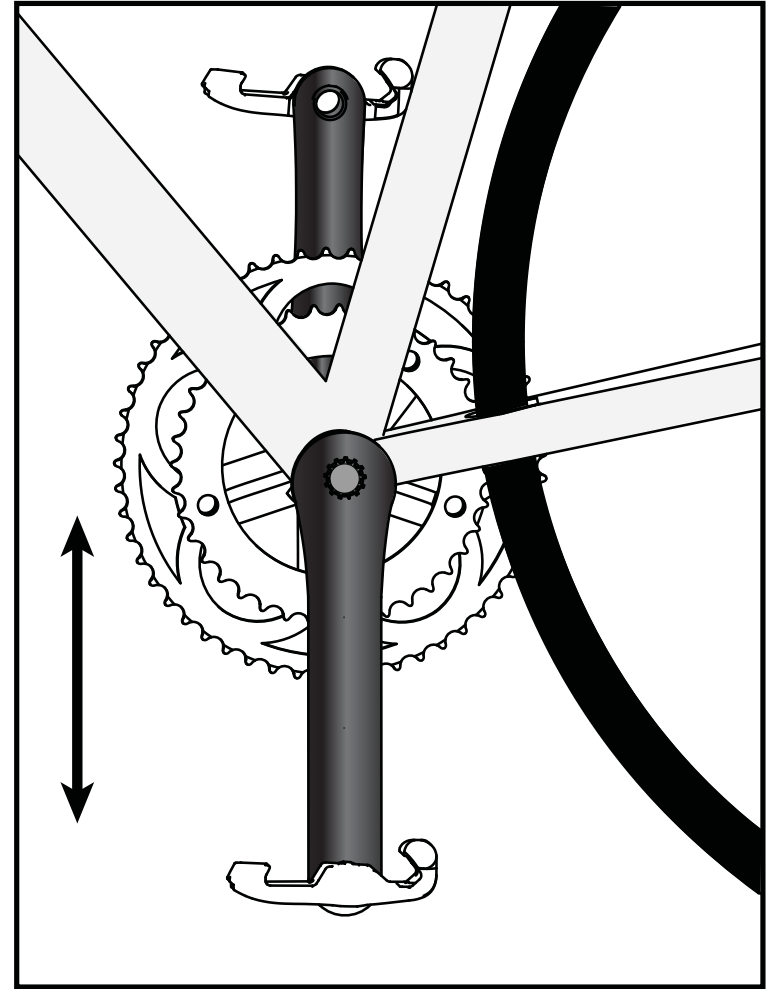


FIG 8

Water resistance notice

The Stages™ power meter is designed to provide excellent water resistance and tested to resist water ingress to the IPX8 standard (2 meters depth for 30min). This provides outstanding water resistance for cycling conditions on-road and off, including stream crossing and heavy rain. Please keep in mind this is an electronic device not a submarine; as such, there are limits to the water resistance.

⚠ Do not subject the power meter to direct spray from a high pressure sprayer. Water exiting a sprayer can reach hundreds and sometime thousands of pounds of pressure per square inch. This may be equivalent to the pressure found at ocean depths of 1000 feet or more! It is possible for water to be forced past the o-ring seal under these conditions and damage to the electronics may occur.

Battery installation or replacement

1. The power meter uses a CR2032 battery that can be installed or replaced by hand without the need for additional tools.
2. Referencing **FIG 1** and **2**; rotate the battery cover in the counter clockwise direction to release the cover.
Do not attempt to use any tools to force or pry the battery cover open.
3. Place the new CR2032 battery into the battery receptacle with the “+” side facing out. It is critical that the battery is inserted in this orientation.
4. Before installing the battery cover take care to ensure the water seal o-ring is seated properly in its groove as illustrated in **FIG 4**.
5. Replace the battery covers as illustrated in **FIG 5**.
6. Once the battery cover has been properly inserted and even with the surface of the power meter, use your finger to firmly rotate the cover back to the locked position as illustrated in **FIG 6**.
7. The service life of the CR2032 battery is approximately 200 hours of use. When the battery voltage is low a message will be sent to the display indicating the low battery condition.
Not all ANT+ or Bluetooth Smart display units will display the low battery warning message.

Power meter (crank arm) installation

⚠ IMPORTANT NOTICE: to insure power meter compatibility with the frame and components, please follow these steps carefully and in the specific order. Do not install the pedals until compatibility of the power meter has been confirmed.

1. Attach the left crank arm to the bike following the instructions provided by the crank arm manufacturer and supplied with your power meter. Links to crank manufacture's installation instructions may be found at the Stages Cycling website: <http://www.stagescycling.com/support-general-instruction>
2. Carefully and fully install the crank arm onto the bike but **DO NOT ATTACH THE PEDAL AT THIS TIME.**
3. **Carefully and slowly rotate the crank 1 full revolution to ensure there is no contact between the power meter sensor housing and any part of the frame or other components** as illustrated in **FIG 7.**
4. If there is interference between the power meter and the frame or other components, contact your retailer for technical assistance. Contact Stages Cycling if the power was purchased from our on-line store.
5. If no interference is found you may continue with the final installation of pedals according to the pedal manufacturer's instructions.

Power meter wireless communication

The power meter is compatible with a wide range of display devices that utilize the ANT+ or Bluetooth Smart (4.0) wireless communication systems. Many leading brands of bicycle computers utilize the ANT+ "profile" for power measurement and can be used to display the power (Watts) and cadence (RPM) measured by the power meter and sent wirelessly to the computer. Bluetooth Smart is a popular wireless communication system included with many of the latest mobile phones. Utilizing Bluetooth Smart, a mobile phone running a compatible App can be used to display the power (Watts) and cadence (RPM) data within the App.

The power meter can only communicate through either ANT+ or Bluetooth Smart but NOT both at the same time. Which type of communication is used depends on the type of display unit the power meter is paired with.

Pairing the power meter

The power meter must be connected or “paired” to the cycle computer or mobile device (collectively referred to as display units) according to the display manufacturer’s instructions. Each power meter has a unique ANT+ device ID and a unique Bluetooth ID. During the pairing process the applicable device ID is recorded by the display and will be used to communicate with the corresponding power meter. The ANT+ ID number is printed on the back of the power meter and also supplied with the documentation. The Bluetooth ID is recognized and displayed by the Bluetooth device during the pairing process. Both the ANT+ and Bluetooth IDs are permanently assigned to the power meter and are not affected by changing the power meter battery. Once paired to the power meter, ride data (Watts and RPM) will be transmitted from the power meter to the display unit. Other important functions such as resetting the power meter’s zero offset will also be enabled through the display unit.

ANT+: Ensure the power meter has a fully charged CR2032 battery properly installed. Rotate the crank arm one time to ensure the power meter is awake and ready to communicate. Follow the ANT+ device manufacturer’s instructions for pairing a power meter to the display unit. The procedures may vary between manufacturers.

Bluetooth Smart: Ensure the power meter has a fully charged CR2032 battery properly installed. Rotate the crank arm one time to ensure the power meter is awake and ready to communicate. Follow the Bluetooth Smart Ready (4.0) device manufacturer’s instructions for pairing a power meter to the display unit. The procedures may vary between manufacturers.

Zero offset

The zero offset is an important feature of the power meter that resets the zero offset value for the power meter sensors. There are physical and environmental conditions that may affect the zero offset value and there are methods both manual and automatic that will adjust this value to accommodate for the changing physical and environmental condition. The zero offset of the power meter is essentially the sensor reading or values measured when the power meter has no pedaling load (torque) applied. The act of resetting the zero offset causes the power meter to measure the value at zero load and then records this value as the baseline for power measurement. Loads applied while pedaling will then be measured as torque and used by the sensor to determine power in Watts. The zero offset value can be affected by the installation of the crank arm and the tightening of the securing hardware. The torque applied to the securing hardware can impart some strain into the crank material that is easily accounted for by manually resetting the zero offset. Any time the power meter is removed from the bike and reinstalled the zero offset should be reset.

Ambient temperature shifts can also affect the zero offset to some extent. To ensure maximum accuracy it is advisable to manually reset the zero offset before each ride. The power meter utilizes automatic temperature sensors to compensate for temperature changes that take place during the ride. This is done automatically while you ride and you need not take any further steps to “zero” the sensor during the ride.

How to reset the zero offset

Resetting the zero offset is a function controlled by the cycle computer or mobile device (display units) paired to the power meter. Please note that some device manufacturers refer to the step of resetting the zero offset as “calibration”. When paired to a compatible ANT+ cycle computer or Bluetooth Smart mobile device, the power meter and display units are in two-way communication. The display unit can send a command to the power meter to reset the zero offset value and in some cases the resulting zero offset value will be sent back from the power meter to the display unit and be shown on the screen. The display units will also indicate if the procedure was successful or failed.

Before attempting to reset the zero offset value of the power meter, ensure that a fully charged battery is in use. Rotate the power meter one revolution to ensure the power meter is awake and ready to communicate.

The left crank arm with power meter **MUST** be positioned straight down (6 o'clock position) and ensure there is no load on the pedals and the bike is stable. See FIG 8 for a visual reference. If the left crank arm is not straight down the reset procedure for zero offset will fail.

Although the process for resetting the zero offset will vary depending on the display manufacturer, it should roughly follow these general step; however, consult your display unit's manual for specific steps:

1. Ensure the power meter has been paired to the device and is sending data.
2. Position the crank straight down (6 o'clock position) FG 8, and the bike is stable
3. Access the settings function of the wireless display.
4. Select the power sensor (many times the power sensor is located within a "BIKE" setting).
5. Select the "CALIBRATE" or "Zero" function.
6. Resetting the zero offset will begin and take only a few seconds to complete.
7. Upon completion the display will show a message indicating success or failure of the procedure.

Error Codes

An error code may be displayed if resetting the zero offset fails. Please note the possible error codes below and corrective action that should be taken. **Please note that not all display units will display the error code message.**

Code #s	Corrective Action
1,2,4,16	Simply attempt zero reset again. If code remains after several attempts please contact Stages Cycling – Technical Support.
32	Power meter crank not in proper position (straight down) see FIG 8 .

Before attempting to reset the zero offset value of the power meter, ensure that a fully charged battery is in use. Rotate the power meter one revolution to ensure the power meter is awake and ready to communicate.

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Firmware

Firmware is the programming that operates the power meter's computer. The power meter has been designed to allow over-the-air (OTA) firmware updates. Updated firmware may be developed and released by Stages Cycling to provide added or improved functionality. Firmware updates may be sent to the power meter by way of the Stages Cycling Utility App for Apple® iOS devices using a Bluetooth Smart compatible (BLE 4.0) model such as the iPhone® 4s, 5 or newer and iPad® 3, Mini or newer. At the time of printing, Android™ Apps supporting Bluetooth OTA updates of the power meter firmware are not yet available; however, these may be developed and released at a later date. Please check our website at: **www.stagescycling.com/support-firmware-update** for links to the available utility Apps hosted in the App stores as well as instructions on how to utilize the App for firmware update and other procedures.

Troubleshooting

If no power (watts) or cadence (RPM) signal is being received by your compatible display unit when riding the bike, please confirm the following items:

1. Confirm that a fully charged CR2032 battery is properly installed in the power meter according to the reference FIGs 1-5 of this manual.
2. Ensure that the power meter has been successfully paired to the display unit being used according the manufacturer's specific instructions.
3. For further assistance with Troubleshooting, FAQs, videos and useful tips, please visit our website at: www.stagescycling.com/support

Maintenance and cleaning

The only items of the power meter that can be serviced by the owner are the battery, battery cover and o-ring. No other items are serviceable and no attempt should be made to adjust or alter any other items.

When cleaning the power meter use only water dampened cloth to wipe off dirt and debris. Never use any harsh cleaning chemicals that may damage the plastic housing. Inspect the battery compartment to ensure the batter contact is clean of any corrosion.

Never directly spray the power meter or battery door with high pressure water. The water pressure from sprayers can reach thousands of pounds per square inch and may force water past the o-ring damaging the power meter electronics.

Warranty procedures

Complete warranty details are available in our Important Product Details document and at our website FAQ page:
<http://www.stagescycling.com/support>

The Stages power meter is considered to be the entire left crank arm, not just the electronics and housing mounted to the crank arm. As such customers are instructed to contact their retailer or Stages Cycling directly for all warranty claims related to the left crank arm power meter. Do not contact the crank arm manufacturer for warranty concerns regarding the left arm as they are not in a position to provide service for this product once the power meter electronics have been permanently integrated.

To pursue a warranty claim please contact the retailer that sold the power meter. If the power meter was purchased directly from Stages Cycling please contact us directly via email or phone:

Info@stagescycling.com

1-800-778-7218 (M-F 8am-5pm PST)

In all cases a Return Authorization Number (RA#) must be issued by Stages Cycling before any product is returned for warranty inspections and service.

The Stages Power™ device may be protected by USA or foreign patents or patents pending.

This document may contain trademarks or registered trademarks of Stages Cycling LLC as represented by the use of ™ and ® respectively.

ANT+™ is a trademark of Dynastream Innovations Inc.

Bluetooth® is a registered trademark of Bluetooth SIG, Inc

Apple®, iPhone®, iPad® are registered trademarks of Apple Inc.

Android™ is a trademark of Google Inc.

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Stages Cycling™

Important Product Information

Contact Information:

Stages Cycling LLC
1732 NW Quimby
Suite 250
Portland, OR 97209
www.stagescycling.com
info@stagescycling.com

California Proposition 65

The enclosed hardware and its packaging contain chemicals the State of California has found to cause cancer, birth defects or reproductive harm.

RoHS

Stages Cycling certifies that this product and its packaging are in compliance with European Union Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronics Equipment, commonly known as RoHS.

FCC Rules Part 15

The enclosed hardware device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) it must accept any interference received, including interference that may cause undesired operation.

FCC Compliance Statement:

This equipment has been tested and found to comply with limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example- use only shielded interface cables when connecting to a computer or peripheral devices).

Caution! The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the users authority to operate the equipment.

IC Statement

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. The device meets the exemption from the routine evaluation limits in section 2.5 of RSS 103 and users can obtain Canadian information on RF exposure and compliance

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement. Le dispositif rencontre l'exemption des limites courantes d'évaluation dans la section 2.5 de RSS102 et les utilisateurs peuvent obtenir l'information canadienne sur l'exposition et la conformité de rf.

CE statement :

Europe – EU Declaration of Conformity This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

EN 60950-1:2006+A12:2011

EN 55022+EN 55024(2010)

EN 301 489-1 V1.8.1(2008-04)

EN 301 489-3V1.4.1(2002-08)

EN 300 440-2 V1.3.1(2009-03)

This device is a 2.4 GHz wideband transmission system (transceiver), intended for use in all EU member states and EFTA countries, except in France and Italy where restrictive use applies. In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services. This device may not be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 – 2483.5 MHz. For detailed information the end-user should contact the national spectrum authority in France. Hereby, Stages Cycling declares that these products are in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

STAGES CYCLING LLC (1) One Year Limited Warranty

HOW CONSUMER LAW RELATES TO THIS WARRANTY

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER RIGHTS THAT VARY FROM STATE TO STATE (OR BY COUNTRY OR PROVINCE). OTHER THAN AS PERMITTED BY LAW, STAGES CYCLING DOES NOT EXCLUDE, LIMIT OR SUSPEND OTHER RIGHTS YOU MAY HAVE. FOR A FULL UNDERSTANDING OF YOUR RIGHTS YOU SHOULD CONSULT THE LAWS OF YOUR COUNTRY, PROVINCE OR STATE.

WARRANTY LIMITATIONS THAT MAY AFFECT CONSUMER LAW

TO THE EXTENT PERMITTED BY LAW, THIS WARRANTY AND THE REMEDIES SET FORTH ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL, WRITTEN, STATUTORY, EXPRESS OR IMPLIED. STAGES CYCLING DISCLAIMS ALL STATUTORY AND IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND WARRANTIES AGAINST HIDDEN OR LATENT DEFECTS, TO THE EXTENT PERMITTED BY LAW. IN SO FAR AS SUCH WARRANTIES CANNOT BE DISCLAIMED, STAGES CYCLING LIMITS THE DURATION AND REMEDIES OF SUCH WARRANTIES TO THE DURATION OF THIS EXPRESS WARRANTY AND, AT STAGES CYCLING'S OPTION, THE REPAIR OR REPLACEMENT SERVICES DESCRIBED BELOW. IN NO EVENT WILL THE VALUE OF THE WARRANTY PROVIDED EXCEED THE ORIGINAL PURCHASE PRICE. SOME STATES (COUNTRIES AND PROVINCES) DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY (OR CONDITION) MAY LAST, SO THE LIMITATION DESCRIBED ABOVE MAY NOT APPLY TO YOU.

WHAT IS COVERED BY THIS WARRANTY?

Stages Cycling warrants the Stages Cycling-branded hardware product and accessories contained in the original packaging ("Stages Cycling Product") against defects in materials and workmanship when used normally in accordance with Stages Cycling's published guidelines for a period of ONE (1) YEAR from the date of original retail purchase by the end-user purchaser ("Warranty Period"). This warranty only applies to the original owner and is not transferable.

WHAT IS NOT COVERED BY THIS WARRANTY?

This warranty applies to Stages Cycling branded products including but not limited to crank arms when packaged or sold with Stages Cycling hardware. Manufacturers, suppliers, or publishers, other than Stages Cycling, may provide their own warranties to you but Stages Cycling, in so far as permitted by law, provides their products "AS IS". Stages Cycling does not warrant that the operation of the Stages Cycling Product will be uninterrupted or error-free. Stages Cycling is not responsible for damage arising from failure to follow instructions relating to the Stages Cycling Product's use. Stages Cycling's published guidelines include but are not limited to information contained in technical specifications, user manuals and service communications.

This warranty does not apply: (a) to consumable parts, such as batteries or protective coatings that are designed to diminish over time, unless failure has occurred due to a defect in materials or workmanship; (b) to cosmetic damage, including but not limited to scratches and dents; (c) to damage caused by use with another product; (d) to damage caused by accident, impact, abuse, misuse, fire, earthquake or other external cause; (e) to damage caused by operating the Stages Cycling Product outside Stages Cycling's published guidelines; (f) to damage caused by service, modifications or alterations performed by anyone other than Stages Cycling or an authorized Stages Cycling Service Provider (h) to defects caused by normal wear and tear or otherwise due to the normal aging of the Stages Cycling Product, or (i) if any serial number has been removed or defaced from the Stages Cycling Product.

IMPORTANT RESTRICTION

Stages Cycling may restrict warranty service to the country where Stages Cycling or its Authorized Distributors originally sold the Stages Cycling Product.