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Visit the ROTOR website (www.rotorbike.com) for current updates and supplemental information concerning the use and operation of this and other ROTOR products.

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Model#: RPM1

FCC ID: R3A-RPM1

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PRODUCT DESCRIPTION

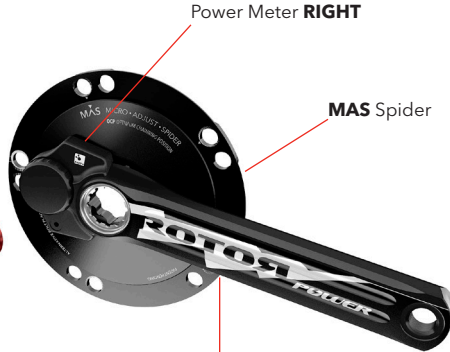
Crank arms are not interchangeable.

Both arms work together as one power meter unit and have specific-sensors ID.

 Non Drive Side Crank Assembly
WARNING: DO NOT DISASSEMBLE 



Power Meter **LEFT**



Power Meter **RIGHT**

MAS Spider

 Drive Side Crank Assembly
WARNING: DO NOT DISASSEMBLE 

**WARNING!**

Read and understand this manual carefully before installing your cranks.

Improvement of product specifications may occur without any prior notification.

COMPATIBILITY

ROTOR Power is compatible with BB30, Pressfit30, BBright, BBright Direct fit, BSA, ITA, BB86 and 386 frames.

For more information consult your ROTOR Authorized Dealer or bike dealer to ensure correct compatibility of ROTOR Power with your frame.

Visit our website: www.rotorbike.com

Follow the instructions in this manual to install and calibrate your ROTOR Power.

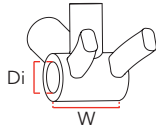
CRANKS INSTALLATION

When installing your ROTOR Power for the first time, complete the following steps:

1. Road / MTB spacer verification (*page 25 and 26*).
2. Non-drive side crank assembly installation (*page 27*).
3. Drive side crank assembly installation (*page 27*).
4. Fixing of drive side assembly (*page 28*).
5. Preload adjustment and fine adjustment (*page 28*).

**WARNING!**

Ensure there is no interference between the cranks and the frame, or any other component part.



1.a) SPACER VERIFICATION FOR ROAD CRANKS

For correct use of your ROTOR Power road cranks it is necessary to select the appropriate spacers for your frame.

NOTE: If different BB/bearing is used, spacing may differ.

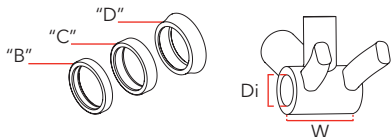
Select your frame and spacers from the list below:

- BB30 frame:** Place one "D" spacer (11,5mm) in drive side and one "D" spacer in non-drive side.
- Pressfit30 frame:** Place one "D" spacer (11,5mm) in drive side and one "D" spacer in non-drive side.
- BBright frames:** Place one "D" spacer (11,5mm) in drive side.

	BB30	Pressfit30	BBright	BSA30	ITA30	BB86	386
W	68mm	68mm	79mm	68mm	70mm	86,5mm	86mm
Di	42mm	46mm	42mm (Direct fit) / 46mm (PressFit)	BSA	ITA	41mm	46mm

- BSA frame:** Place one BSA30 cup (L) in non-drive side and one BSA30 cup (R) in drive side of the frame.
- ITA frame:** Place one ITA30 cup in non-drive side and one ITA30 cup in drive side of the frame.
- BB86 frame:** Place one PF4130 cup in non-drive side and one PF4130 cup in drive side of the frame.
- 386 frame:** Place one PF4630 cup with an "A" spacer (2,5mm) in non-drive side and one PF4630 cup with an "A" spacer in drive side of the frame. ("A" spacers not included, visit your ROTOR distributor)

Read your bottom bracket manual to verify the compatibility with your frame.



1.b) SPACER VERIFICATION FOR MTB CRANKS

For correct use of your ROTOR Power MTB cranks it is necessary to select the appropriate spacers for your frame.

NOTE: If different BB/bearing is used, spacing may differ.

Select your frame and spacers from the list below:

1. **BB30 and Pressfit30 68mm frames:** Place one "C" (8,5mm) spacer with one "D" (11,5mm) spacer in drive side and non-drive side.
2. **BB30 and Pressfit30 73mm frames:** Place one "B" (5,5mm) spacer with one "D" (11,5mm) spacer in drive side and non-drive side.

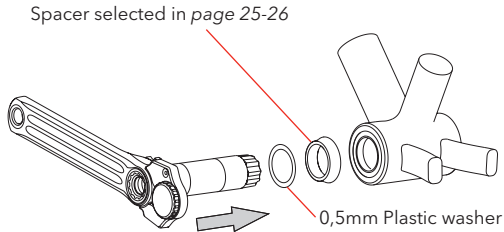
	BB30	Pressfit30	EBright	BSA30	BB89	BB92
W	68/73mm	68/73mm	84mm	68/73mm	89,5mm	92mm
Di	42mm	46mm	46mm	BSA	41mm	41mm

3. **BBright frame:** Place one PF4630 cup with one "B" (5,5mm) spacer in non-drive side and one PF4630 cup with one "D" spacer (11,5mm) and one "B" (5,5mm) spacer in drive side.
4. **BSA 68mm frame:** Place one BSA30 cup with one "C" (8,5mm) spacer in both sides of the frame.
5. **BSA 73mm frame:** Place one BSA30 cup with one "B" (5,5mm) spacer in both sides of the frame.
6. **BB89 and BB92 frames:** Place both PF4130 cups with one "B" (5,5mm) spacer in both sides of the frame.

Read your bottom bracket manual to verify the compatibility with your frame.

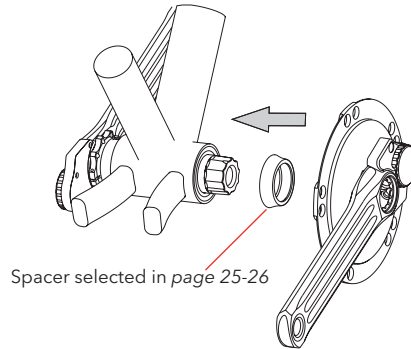
2. NON-DRIVE SIDE INSTALLATION

- 2.1. Place a 0,5mm plastic washer onto the axle.
- 2.2. Select the appropriate spacer(s) for the non-drive side in page 25 (road) or 26 (MTB) and place them into the axle following the 0,5mm plastic washer.
- 2.3. Introduce the non-drive assembly into the frame through the bearing and frame.



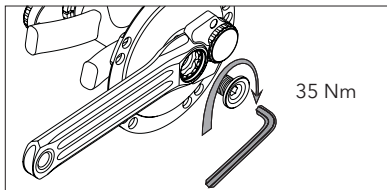
3. DRIVE SIDE INSTALLATION

- 3.1. Grease the right end of the axle.
- 3.2. Select the appropriate spacer(s) for the drive side in page 25 (road) or 26 (MTB) and place it between the frame and the drive side crank.



4. FIXING OF NON-DRIVE SIDE ASSEMBLY

- 4.1. Tighten drive side alloy bolt to 35 Nm using an 8mm allen torque wrench.



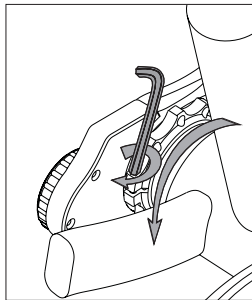
5. PRELOAD ADJUSTMENT

- 5.1. Eliminate lateral play by tightening counterclockwise the preload nut by hand.
- 5.2. Lock the preload nut by tightening the pinch bolt clockwise with a 2 mm allen wrench.

**WARNING!****Do not overtighten the bolt**

6. FINE TUNE ADJUSTMENT

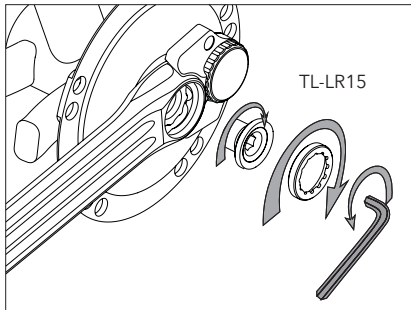
- 6.1. If the crank does not turn smoothly, remove the 0,5mm plastic washer in non-drive side and repeat the "preload adjustment" steps 5.1 and 5.2.
- 6.2. If there is lateral play, use an additional 0,5mm plastic washer in the non-drive side and repeat the "preload adjustment" steps 5.1 and 5.2.

**WARNING!**

Ensure preload nut is still threaded in non-drive side arm.

CRANKSET REMOVAL

1. Remove **drive side** bolt.
2. Remove **drive side** steel nut using a cassette locking tool (Shimano TL-LR15 or similar).
3. Screw the drive side alloy bolt clockwise into the spindle.



4. Flip the drive side nut over and screw it clockwise into the crank arm to be used as a selfextracting cap. It must be flush with the outer face of the arm and all of its threads must be engaged.
5. Unscrew the drive side alloy bolt counterclockwise using an 8mm allen wrench until the drive side assembly disengages from the spindle.

ROTOR POWER INSTALLATION

Once the cranks are assembled there is no need for any other installation to use the Power meter. All sensors and electronic parts are already mounted with the cranks.

PAIRING

Connect your ROTOR Power to any ANT+™ sensor device to display output values.



For a complete listing of ANT+™ Certified Products and their specific interoperability, visit the ANT+™ Product Directory: <http://www.thisisant.com/directory/>

Read the ANT+™ device manual for further instructions.

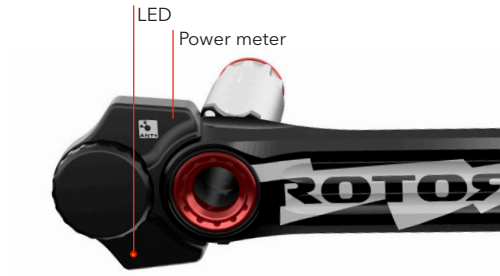
Before pairing ROTOR Power with a monitor, make sure you are at least 10 meters (30 feet) away from any other ANT+™ Power sensor. This will prevent accidentally pairing to another Power sensor.

The ROTOR Power retains its "SENSOR ID" throughout battery replacements and will remain properly paired.

PAIRING PROCESS

To pair the ROTOR Power with any ANT+™ device:

1. Start the power meter system by turning cranks 2-3 times until the red LED on crank starts flashing.
2. Wait until red LED on crank stops flashing. The ROTOR Power starts sending the radio signal and is ready for measuring information.



AUTOMATIC PAIRING

3. Push the "SCAN" button in your ANT+™ device at the ANT+™ Power screen. The "SCAN" button is usually placed in the menu: Settings\Bike settings\Bike profiles\Your profile\ANT+ Power.



MANUAL PAIRING



If you have more than one ANT+™ Power sensor introduce the "SENSOR ID" of the ROTOR Power into the ANT+™ device; "SENSOR ID" can be found at the inner side of the drive side crank as the last 5 digits of the shown number or in your Identity Card included into the package.
I.E.: **SENSOR ID_00054**



CALIBRATION/ZEROING

The main reason to calibrate / zero your ROTOR Power is to secure an exact power measurement.

Calibrating the power meter compensates for any mechanical change that influences the measurement since the last calibration/zeroing.

ROTOR Power should be calibrated after any chainring, frame, or pedal changes. After every calibration process ROTOR Power shows one second flash at the red light LED.



WARNING!



In order to save energy the "CALIBRATE" command is admitted only within 60 seconds from startup or last valid power readings.

ZEROING PROCESS



To zero your Rotor Power:

1. Place the drive side crank in a 6 o'clock vertical position with the rider off the bike.
Don't move the cranks until step 3 is done
2. Follow the specific instructions of your ANT+ computer device to send the "CALIBRATE" signal.

The "CALIBRATE" button is usually placed in the menu:
Settings\Bike settings\
Bike profiles\Your profile\
ANT+Power.

3. Read the feedback value for the drive side crank from your device. For correct zeroing the value should be between: 700-3900.
4. Don't move the cranks until the step 6 is done.
5. Repeat Zeroing process step 2.
6. Read the feedback value for the non-drive side crank from our device. For a correct zeroing the value should be between: 4000-7200.

There is no need to zero your Rotor Power every time you ride.

ROTOR POWER START UP

The device has a service LED (red light) viewable on the external side of ROTOR Power.

At every start-up the LED will blink for some times (from 1 to 10) depending on the charge of battery.

- If LED blinks 10 times battery is FULL 100%.
- If LED blinks 3 times battery is EMPTY 10%.

The ROTOR Power becomes inactive and starts a state of rest after 2 minutes of inactivity.



BATTERY

The ROTOR Power is powered by two lithium standard batteries: CR2477B.

Estimated riding time: 300-400 hours

The battery must be installed correctly (with positive "+" side facing outside) and have charge enough for use. The battery charge can be checked by any computer or bike device compatible with ANT+™



The battery cover should only be removed when changing batteries. Repeated opening can damage the internal sealing.

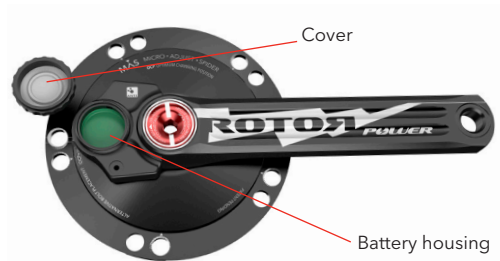
Be careful when threading the battery cover to prevent any thread damage.

BATTERY REPLACEMENT

No tools are required to replace the batteries. It is recommended that you change both batteries at the same time.

Replacement process:

1. Open the cover of the battery cover turning it counter-clockwise by hand.
2. Extract the old battery from the housing.
Trick: If you cannot remove the battery easily by hand use a magnet to take it out.
Do not use any tool or sharp object.
3. Place a new battery into the housing with the positive "+" side facing out.
4. Thread the battery cover screwing it clockwise by hand.




WARNING!



Do not throw the old batteries away with normal waste, batteries should be disposed of properly according to local regulations.

ROTOR POWER TRAINING USE

After pairing ROTOR Power follow the configuration options of your ANT+™ computer device to select the measures you would like to display on your device.

 Consult your trainer in order to evaluate which of the measured values provided by ROTOR Power are optimal to maximize your performance.

ROTOR POWER MEASUREMENT

ROTOR Power starts measuring automatically after moving the crank. In normal use, sampling is done every 2ms (500 times per second) and sent by radio emissions to your ANT+™ device.

ROTOR Power sends the following data to the ANT+™ device:

POWER: Total power output measured in watts for both legs.

BALANCE: Left - Right leg percentage contribution to power.

CADENCE: measured in RPM (revolutions per minute).



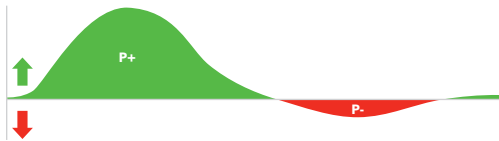
WARNING!



Disable any ANT+™ cadence sensor from your bike, there is no need for it and it may cause interferences with the internal ROTOR Power cadence sensor.

TORQUE EFFECTIVENESS (LEFT/RIGHT):

Positive power contribution to total power in a pedaling cycle. Measured as a percentage; 100% means no negative power.



PEDAL SMOOTHNESS (LEFT/RIGHT):

Ratio between average power and peak power in a pedaling cycle. Measured as a percentage.

MAINTENANCE

Inspect your ROTOR product for wear, looseness or damage including cracks, dents and serious scratches, before each ride and after every fall or crash.

Do not use your ROTOR product until it has been thoroughly inspected, repaired or replaced.

Cyclists should inspect their whole bicycle and parts on a regular basis or consult with a professional bicycle mechanic, to determine the need for service, or replacement and to detect damage that may have occurred from normal use.

Check all parts for damage and wear before every use.

Check the bolts and other fasteners periodically for tightness. Ensure they are tightened to the correct torque values.



WARNING!



Never use high pressure cleaning equipment or chemical products to clean the ROTOR Power.

Waterproof level: IP7x.

Do not try to disassemble any electronic ROTOR Power part, the sealing could be damaged and this invalidates the warranty.

Do not disassemble the metal bolts of the bottom cover, it can produce an electronic failure.

In case of any electronic failure, service must be performed at an authorized ROTOR technical service center.

Continuing to use damaged parts may lead to loss of control and cause serious injury or death.

TECHNICAL SPECIFICATIONS

■ Optimal operating temperature:	-5 to 55 C
■ Max. humidity for optimal use:	90%
■ Battery specifications:	3.0 V (1000 mA CR2477B lithium battery)
■ Estimated battery life:	300 to 400 hours using time
■ Voltage supply:	1.9 V
■ Standard averaged work consumption:	2.1 mA
■ Standard averaged standby consumption:	3.2 μ A
■ Reading sensor:	Strain Gauges
■ Working frequency:	ANT+ 2.4 Ghz
■ Max RF Power output:	-5 dB
■ Total added weight:	36 g
■ Data transmitted:	Power, cadence, balance, torque efficiency, pedal smoothness
■ Power precision:	+/- 1 W
■ Cadence precision:	+/- 0,5 rpm
■ Balance precision:	+/- 0,5%
■ Torque effectiveness precision:	+/- 0,5%
■ Pedal smoothness precision:	+/- 0,5%

SAFETY WARNING

This owners manual contains important and useful information regarding the proper installation, operation, care, and maintenance of your ROTOR product. Carefully read, follow and understand the instructions as detailed in this owner's manual. Keep this manual in a safe place for future reference.

If you have any doubt whatsoever regarding your ability to install or service this product, please consult your ROTOR dealer and seek the assistance of a professional bicycle mechanic. Do not perform any modifications or adjustments that are not outlined in this manual.

Incorrect installation or servicing may impair performance, and could result in a dangerous situation leading to serious injury or death. Components that have experienced excessive wear, deformations or impacts or other damage need immediate professional inspection or replacement.

Please have this product regularly inspected by a qualified mechanic for any signs of wear or damage.

Failure to perform necessary and essential maintenance could drastically reduce the service life of your ROTOR product and reduce its performance.

If you have any questions, please contact a professional bike mechanic or your nearest ROTOR dealer for additional information.

ROTOR WARRANTY POLICY

- The ROTOR products and its components are guaranteed for 2 YEARS against any manufacturer defects or defective materials. In the event of a warranty defect, Rotor's sole obligation under this warranty is to repair or replace, at its option, the defective part or product at no charge. Moreover, in some countries, Rotor is obliged to ensure any legal warranty defined by law for the customer's protection.
- Elements subject to wear and breakdowns that the manufacturer is not responsible for, are not covered by this warranty.
- Failures or breakdowns caused by improper use, poor assembly or inadequate maintenance as declared in the supplied instructions or the user manual are not covered by this warranty.
- Always keep your receipt or invoice.
- The following acts void this warranty:
 - Failure to fulfil the requirements above.
 - Improper installation.
 - Improper use or installation of inadequate parts.

Warranty Service: Original purchaser must send their Rotor product along with the retailer's original bill, credit card receipt or other satisfactory proof of date of purchase of the product.

REGULATORY STATEMENTS

This 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) this device must accept any interference received, including interference that may cause undesired operation.

Modifications not expressly approved by this company could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the 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 a residential installation.

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 harmful interference to radio or television 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.

This product does not contain any user-serviceable parts.

Repairs should only be made by ROTOR distributors.

Unauthorized repairs or modifications could result in permanent damage to the equipment, and void your warranty and your authority to operate this device under Part 15 regulations.

CEE REGULATION

This product is compliant with Directive 93/42/EEC.

ROTOR RPM1
FCC ID: R3A-RPM1

