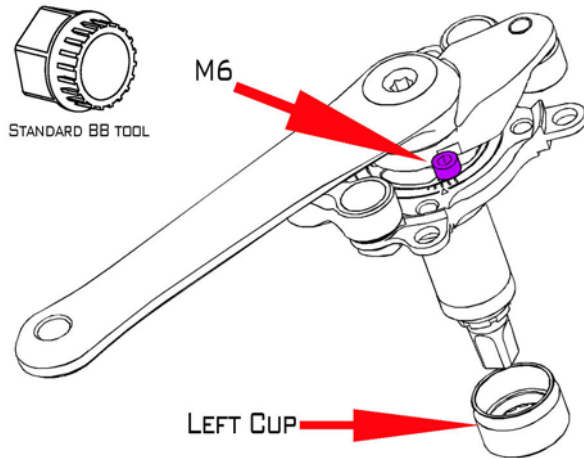


RS4 INSTRUCTION MANUAL



Together with your Rotor Cranks, BB and chainrings, you will find in the box:

- RS4 instruction manual,
- warranty sheet with the serial number,
- thread lock adhesive F43 (medium strength),
- bolts & nuts for the chainrings,
- two washers for the pedals,
- M6 bolt.

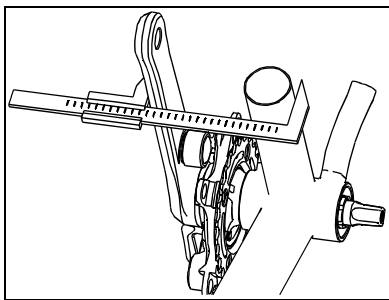
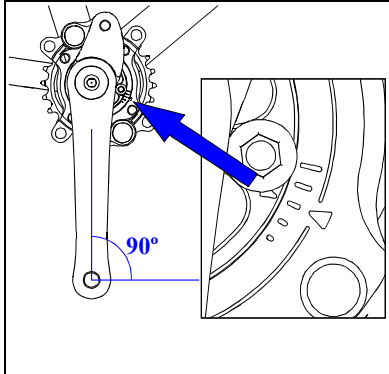
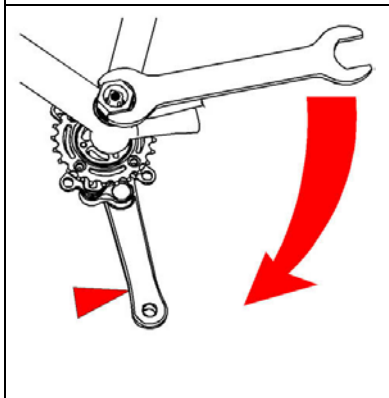
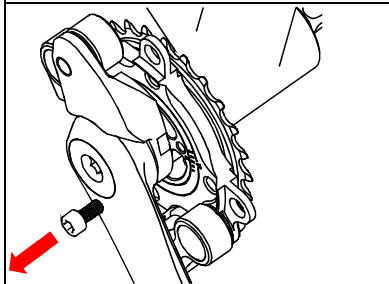
Required Tools for assembly:

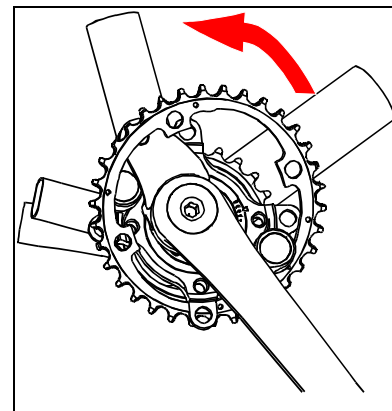
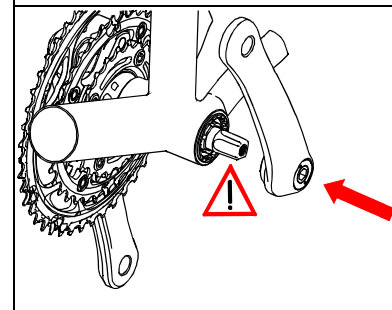
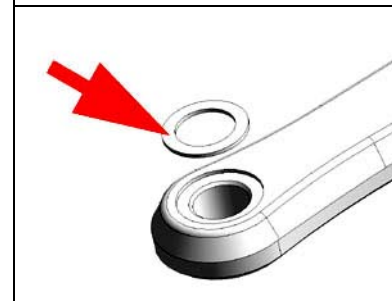
- Allen key/Hex wrench 5mm and 8mm
- Standard bottom bracket tool
- Adjustable wrench or 32mm wrench
- Grease remover
- Assembly Grease
- Chain line measuring device: Caliper

INSTALLATION INSTRUCTIONS

	<p>1. CLEANING AND PREPARING THE BOTTOM BRACKET TUBE</p> <p>Clean the frame's bottom bracket tube of all residue (grease, oil, dirt) with a solvent such as Finish Line Citrus Biosolvent and thoroughly dry the area.</p> <p>You may need to clean and/or dress the threads in the BB tube using a thread chasing tool (English or Italian thread, depending on the bike)</p> <p>Important: If the BB tube is not completely clean of lubricant residue and moisture, the thread locking adhesive will not work properly.</p>
	<p>2. PREPARING THE ROTOR</p> <ul style="list-style-type: none"> - Take off the left crank. Slide the left BB cup (Left-hand Adaptor) off of the spindle. The left BB cup is a precision fit on the spindle so it will simply slide off of the BB spindle. - Tighten the M6 screw on the eccentric (see illustration). <p>Important: Before mounting the Rotor system, we recommend that you remove the chainrings to avoid damaging the front derailleur.</p>

	<p>3. APPLY MEDIUM STRENGTH (BLUE COLOR) THREAD LOCK ADHESIVE.</p> <p>Apply a sufficient amount of <u>medium strength thread lock adhesive F43</u> (anaerobic resin like LOCTITE 243) on the threads of the right side of the BB tube, ensuring that the first threads are sufficiently covered with the adhesive. Also apply a little bit of medium strength thread lock adhesive to the threads on the left side of the BB tube.</p> <ul style="list-style-type: none"> - You must use medium strength thread locking adhesive to correctly install the Rotor eccentric. A small amount, sufficient for the first installation, is included with your Rotor. - NEVER use any type of grease during this assembly step: if grease has been used, the mechanism will not properly secure and the regulation points will change while pedaling. - NEVER use a thread locking adhesive other than medium strength. Using a different strength could prevent the extraction of the Rotor system in the future and/or seriously damage the threads of the bottom bracket tube.
	<p>4. INSTALL THE LEFT CUP BY SCREWING IT ON APPROXIMATELY HALF WAY</p> <p>Use the spindled Standard BB installation tool.</p>
	<p>5. ONLY FOR THE INSTALLATION OF A TRIPLE CHAINRING MODEL (MTB or Road)</p> <p>Place, the 3rd (small) chainring onto the eccentric of the Rotor. Do not yet fasten the chainring using the bolts (See illustration). This step will prevent damaging the front derailleur and the chain stay, and allow placement of the other two chainrings later in the installation process.</p> <p>Important: Make sure that the bolt-head impressions on the chainring are facing the frame of the bicycle.</p>
	<p>6. SCREWING THE ROTOR INTO THE BOTTOM BRACKET</p> <p>Screw the Rotor (by hand and without force) onto the BB tube by turning the right crank counter-clockwise for English thread frames or clockwise for Italian thread frames.</p> <p>Do not screw on completely!</p> <p>Important: If the Rotor does not easily screw into the BB tube, it is recommended that a thread-chasing tool be used to clean and sharpen the BB threads (English or Italian thread depending on the bike).</p>

	<p>7. MEASURING THE CHAIN LINE Screw the Rotor into the threads until the distance between the outside part of the right crank (at the pedal hole) and the center of the seat tube of the bicycle measures approximately:</p> <ul style="list-style-type: none"> - 75.5 mm for 2 chainring Road. - 80 mm for 3 chainring Road. - 82.5 mm for MTB XC (chain line 47.5mm) - 84.5 mm for MTB Free Ride (chain line 49.5mm) <p>Note: To facilitate the measuring procedure and improve accuracy: first measure the seat tube diameter, then add half of this distance to the above measurement. This allows you to measure to the outside of the seat tube instead of the center of the seat tube. Each time we screw or unscrew the Rotor one 360 degree revolution, the system moves in or out approximately 1mm.</p>
	<p>8. REGULATING THE ROTOR To correctly align the Rotor it is important that the tires are properly inflated and that the bicycle is standing in a horizontal position on a level surface with the right crank pointed towards the floor, creating a 90° angle. Position the system by pushing or pulling the right crank against the M6 screw, raising or lowering the eccentric so that the reference point (inside triangle) coincides with the triangle on the "spider wheel." In order to check the set regulation point, position the right crank pointed downwards again. There are five possible regulation points, with the triangle being the third (always counting from the top). We recommend this middle regulation, however, positioning depends on each user's physical characteristics, form of pedaling, etc. With lower points, more comfort during climbs (lower muscular requirement) will be achieved, while with the higher points the cyclist will achieve higher top speeds, requiring more muscular effort. Usually XC and TT competitors prefer using the system regulated with the reference triangle positioned in the middle or at one point above the triangle; while road cyclists prefer to ride with the system regulated at the reference triangle or one point below the triangle.</p>
	<p>9. FASTENING THE ROTOR</p> <ul style="list-style-type: none"> - Carefully turn the right crank in the same direction as the pedaling motion (clockwise) as far as the M6 screw permits without changing the previously set regulation point. - While holding the right crank with the left hand, tighten the left cup with the right hand. - Strongly tighten the left cup (approximately 52-55 lb-ft or 70-75 N-m). - Check to see that the desired regulation point is set and did not move during the tightening process. <p>Important: -The tightening of the left BB cup (Left-hand Adaptor) is very important because the left BB cup, secures the Rotor System. The left BB cup is not an adjusting cup, it is a locking cup. -Tightening the cup should be completed in a progressive process and without sudden jerks or pulls, which could change the positioning of the regulation points. In case the positioning of the regulation point has been moved, it is necessary to repeat the "Regulating the Rotor" procedure in step #8.</p>
	<p>10. REMOVE THE M6 SCREW FROM THE ECCENTRIC Remove the M6 screw using a 5mm Allen key/hex wrench.</p>

	<p>11. PLACING THE CHAINRINGS, BEGINNING WITH THE 2nd CHAINRING Maneuver the right crank so that it is pointed to a 4 o'clock position (down and forward) to facilitate the placement of the 2nd chainring on the Rotor. Make sure that the bolt-head impressions on the 2nd chainring are facing the frame of the bicycle. The chainrings has a small arrow on the outside surface. Use this arrow as a reference and place the chainrings so that this arrow points towards the pedal hole in the right crank. Place the 1st (largest) chainring on the Rotor. We recommend mounting the chainring bolts for the 1st and 2nd chainrings with assembly grease, which often prevents inadvertent loosening. Finally, in the event of a triple chainring model, secure the 3rd chainring with the installation bolts. If there is a reference arrow on the 3rd chainring it should be aligned pointed towards the pedal hole (a chainring with 24 teeth does not have a reference arrow).</p>
	<p>12. INSTALLING THE LEFT CRANK</p> <ul style="list-style-type: none"> • Degrease the axle and the crank square tapered head. • We recommend that you use medium strength thread locking on the threads of the BB spindle (required on the titanium model). • Using an 8mm Allen/hex tool, tighten the left-crank fixing bolt while watching to be certain the left crank is correctly & evenly pulling tight on the taper of the BB spindle. Tighten the bolt to 25.9 lb-ft or 35 N-m.
	<p>13. BEFORE INSTALLING THE PEDALS, PUT A WASHER (PROVIDED) INTO THE INSET POSITION LOCATED AT EACH PEDAL HOLE.</p> <p>Pedal tightening torque is 29.5 lb-ft or 40 N-m</p>

IMPORTANT:

- Do not ride your bike immediately after the assembly procedure. Your bike should not be used for the following 2 ~ 3 hours; you must allow adequate time for the thread adhesive to dry completely, to prevent movement of the Regulation Point.
- The correct regulation point is that in which you feel comfortable using the system in all conditions (in flat riding or climbing, seated or standing).
- For some cyclists to attain the athletic benefits of the Rotor system, a time period of 2 to 3 weeks and up to 3 to 4 months, depending on the characteristics of the cyclist, may be required.

STEPS TO CHANGE THE REGULATION POINT

1. Remove the left crank.
2. Tighten the M6 screw on the eccentric.
3. Using the standard bottom bracket tool, loosen the left BB cup (Left-hand Adaptor): 2 turns is enough.
4. Turn the right crank up or down, pushing the M6 screw, moving the eccentric to the new desired point. Look at step 8 of the Installation Instructions.
5. Repeat steps 9 thru 12 of the Installation Instructions to complete the process.

Note: If you change the regulation point several times, we recommend that you finally remove the Rotor and follow the installation instructions from the beginning in order to ensure that the thread locking adhesive securely holds the Rotor and prevents movement within the BB tube threads.

STEPS TO REMOVE THE ROTOR

1. Remove the chainrings.
2. Remove the left crank.
3. Tighten the M6 screw on the eccentric.
4. Using the standard bottom bracket tool loosen the left BB cup (Left-hand Adaptor): 2 turns is enough.
5. Turn the right crank, unscrewing the Rotor until it is completely removed. If necessary use a left crank to apply more force unscrewing.
6. Take off the left BB cup (Left-hand Adaptor).

MAINTENANCE



Washing

NEVER spray (shoot) water against the Rotor System; this will enable water to enter into the bearings, creating oxidization (rust) leading to mechanical problems with the Rotor System.

You may ride in wet conditions (i.e. in rain, through streams/streams) and you may gently rinse off the Rotor System using a damp cloth.

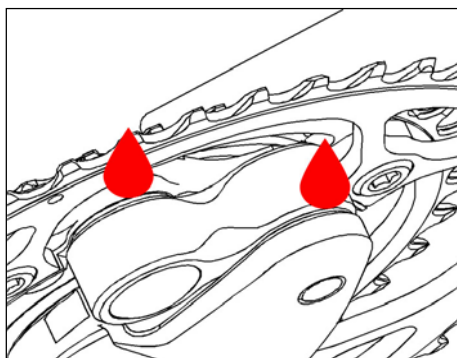
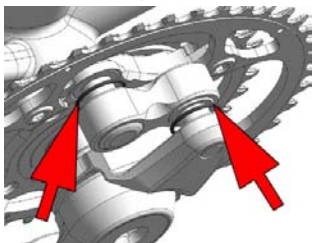
Helpful tips

We recommend that you check these points regularly:

1. Be certain the fixing-bolt of the left-crank is tight, so the crank is tight on the spindle.
2. Be certain the chainring bolts and nuts are securely tightened.
3. Be certain the regulation point of the Rotor system is where you want it and that it has not slipped or moved.

Lubricating the RS4

Even riding under water, as long as there is no significant pressure shooting water at the Rotor System, the bearings should be fine. Every time you lubricate the chain, put a drop of oil over each o-ring on the pivot links. (There are 2 pivot links and 2 o-rings on each link).

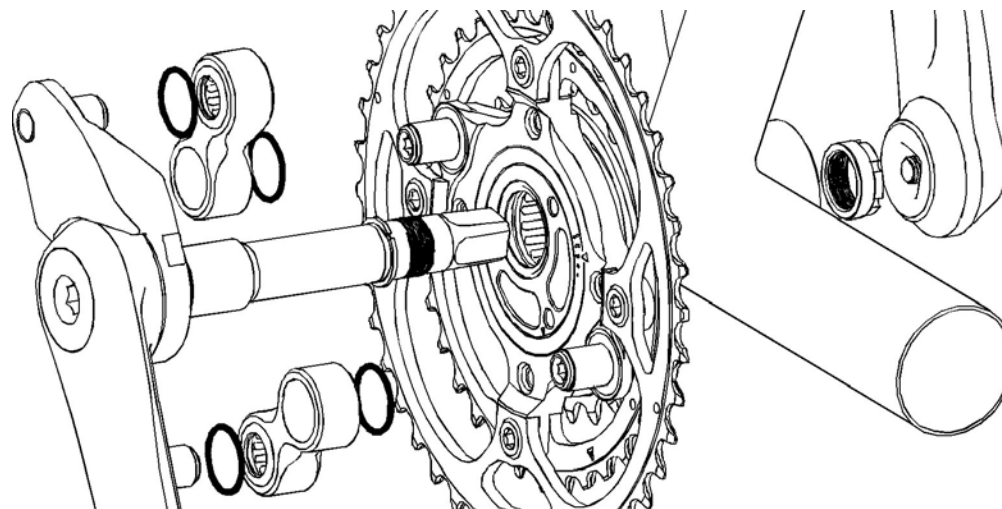
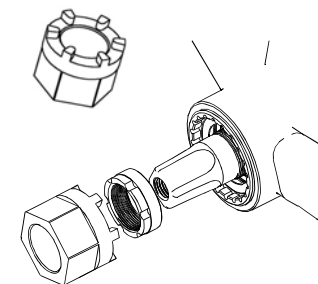


At least once per year, or every 8,000 miles, whichever occurs first, we recommend that the bearings in the links and the main axle be lubricated.

We recommend that a qualified professional bicycle mechanic do this, but if you prefer to do it yourself, you will need the URS4 tool (see drawing), which is available for sale from most Rotor resellers.

For this maintenance process you will disassemble the system in main modules that configure the mechanism, and proceed as follows:

1. Remove the left crank.
 2. Remove the axle fixing nut, using the URS4 tool.
 3. Take out the axle with the right crank, pushing from the left side of the axle and pulling from the right crank.
 4. Take the links in your hands, taking care not to loose the 4 o-rings.
 5. Clean and lubricate the axle bearings, the link bearings and the o-rings.
 6. Reassemble the system following previous steps 4, 3, 2 & 1.
- Note: It is not necessary to remove the chainrings.



The **required frequency** of greasing depends on the conditions of use. If not exposed to water/wet/muddy conditions, simply lubricate these bearing once every year, or every 8,000 miles. If the Rotor System is very exposed to water/wet/muddy conditions, we suggest a cleaning and lubrication within 2 months.

We recommend that you use a high quality lubricant, such as **FINISH LINE TEFLON-FORTIFIED GREASE**. Visit www.finishlineusa.com to locate a licensed Finish Line retailer in your area.



The main bearing & most important bearing in the Rotor System is the bearing located inside the spider. This is a sealed bearing, however it is very important that a direct pressurized stream of water never comes into contact with this bearing or area. If you believe that there is a problem, i.e. oxidation, with this bearing, we recommend that you contact an authorized Rotor Technician to make the necessary cleaning & lubricating, or replacement.