Lightning Carbon Cranks/BB Installation Procedure

Thank you for selecting the highest performance carbon crank/BB assembly on the planet!
To maximize your enjoyment and operation of your Lightning carbon crank/BB
please thoroughly read the installation procedure that follows.
A non-compliant installation omitting these important procedures will void your warranty.

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U.S. Patent 6,443,033 B1, other patent(s) pending

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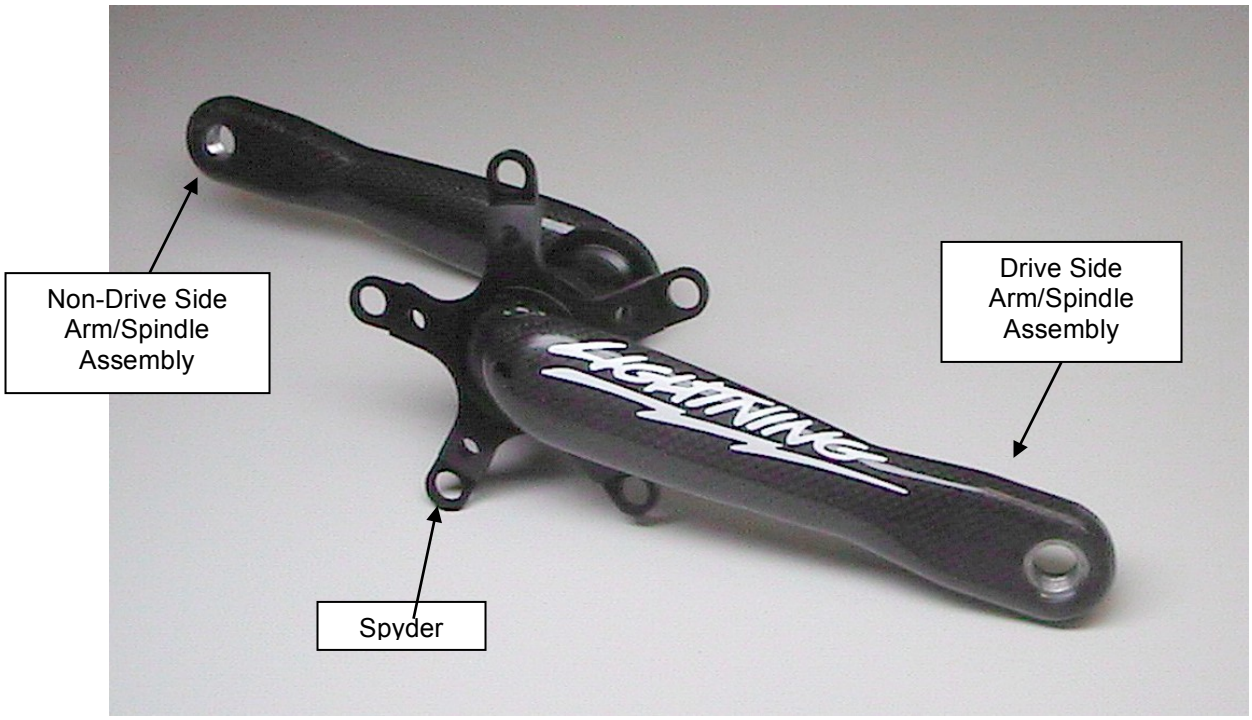
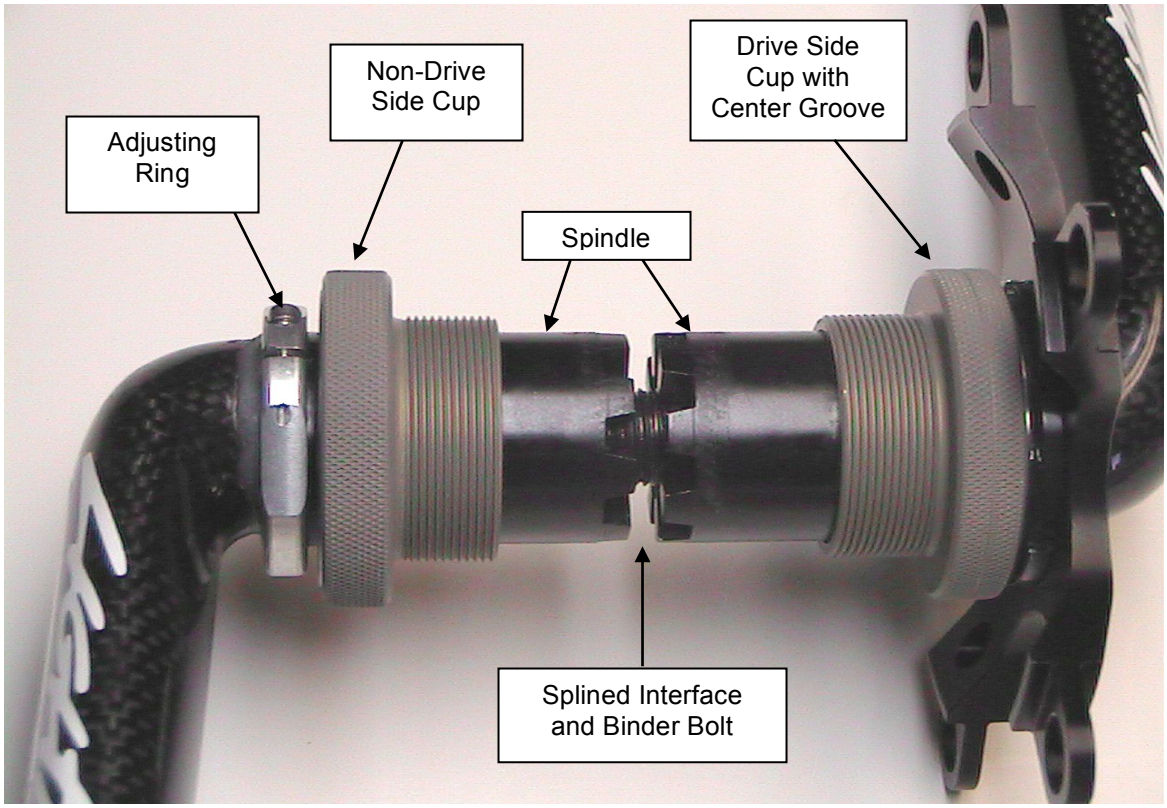
1) **Component Familiarity:** Familiarize yourself with all the components and their nomenclature





Cup Installation

2) Threaded Cup installation:

A) Install Drive-Side Cup: (the cup with the center groove).
The drive-side cup has Left Handed Threads and cannot be screwed into the non-drive side of your bottom bracket shell or else the threads on the cup and the shell will be destroyed.
First lubricate the threads with high quality grease or Ti-prep. Then gently screw the drive-side cup into the shell by rotating counterclockwise. Tighten the cup by hand and make sure it seats against the shell surface. The cup should easily thread into the shell by hand. Insert the supplied rubber sheet between your hand and the cup, and torque the cup against the shell as much as possible. (Normally wrenches are not needed, the rubber sheet will allow you to apply a torque of about 14 N-m (10 ft-lbs). Ensure that the cup is firmly seated against the shell surface.

B) Install Non-Drive Side Cup: (the cup without the center groove).
The non-drive side cup has conventional Right Handed Threads and cannot be screwed into the drive side of your bottom bracket shell or else the threads on the cup and the shell will be destroyed.
Lubricate the threads with high quality grease or Ti-prep. Gently screw the non-drive side cup into the shell by rotating clockwise. Tighten the cup by hand and make sure it seats against the shell surface. The cup should easily thread into the shell by hand. Insert the supplied rubber sheet between your hand and the cup and torque the cup against the shell as much as possible. (Normally wrenches are not needed, the rubber sheet will allow you to apply a torque of about 14 N-m (10 ft-lbs). Again, ensure that the cup is firmly seated against the shell surface.

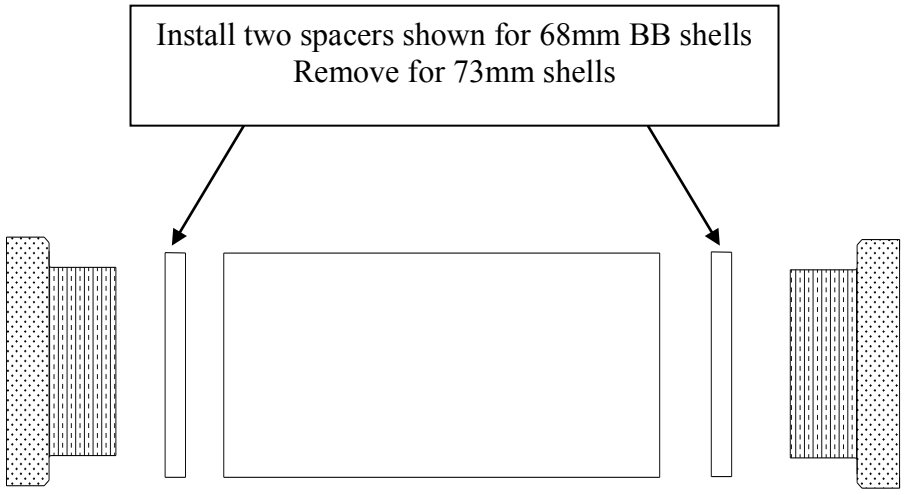
NOTE:
Blue Loctite or spoke Prep can be used instead of grease for a more secure threaded cup installation, but the cup will be destroyed upon removal.

3) **Press fit cup installation:**
Verify/ remove existing bearings or cups from your frame, and install Lightning specific cups using tools specific to your bottom bracket type. If the cups are tight fitting grease can be used on them, if they are loose fitting Loctite 680 with 7471 primer is advised. A Park press tool works well for installing most press-in cup/bearings.

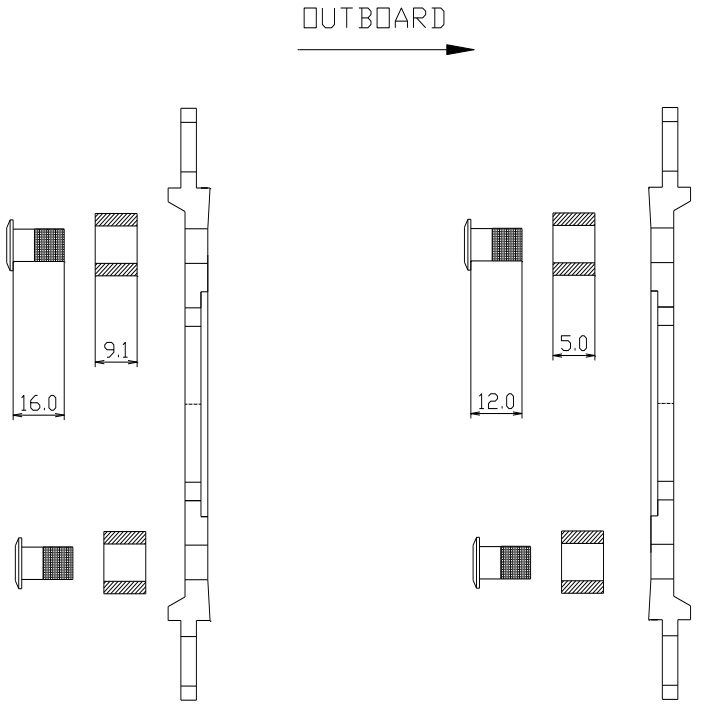
NOTES FOR MTB CRANK AND CUP INSTALLATION:

A) The MTB cranks include a spindle spacer, when shipped it is attached to the right arm/spindle assembly with Super Glue (Cyanoacrylate) to ease installation. If it comes loose for any reason it can be re-attached with Super Glue, for proper spindle alignment immediately secure the arm/spindle assemblies together after gluing.

C) Cup spacers are included with BSA threaded cups, install the spacers as shown below:

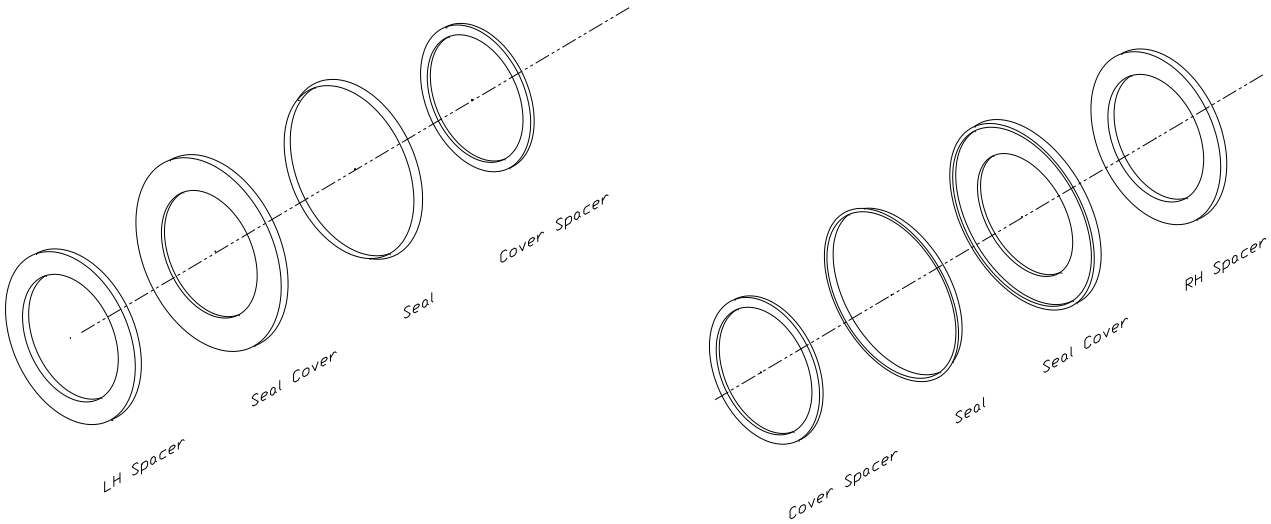


4) Install your chain wheels and properly secure their attachment bolts. Grease the attachment bolts for easy removal.



LIGHTNING MTB CRANK
REVERSABLE SPYDER
SETUP DETAIL

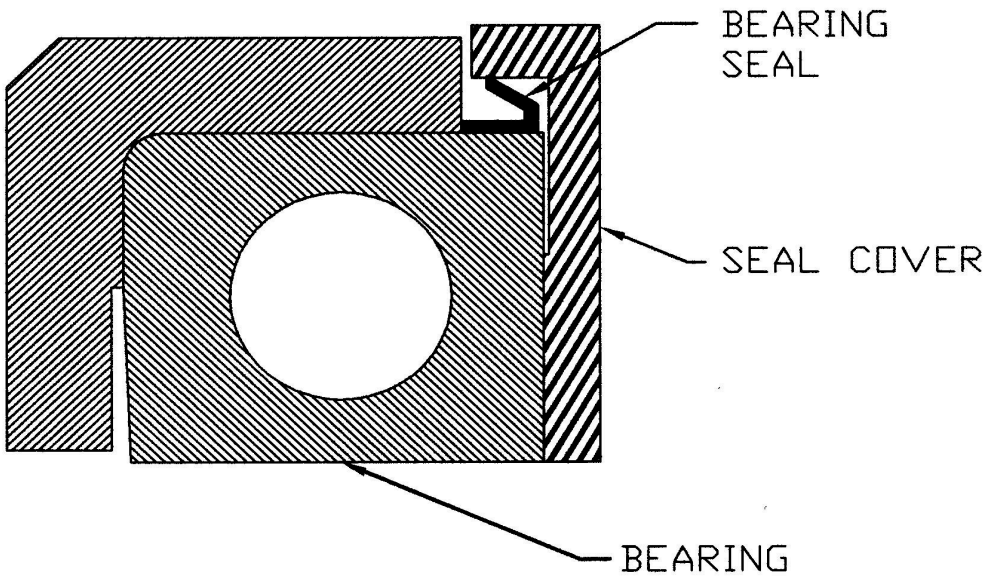
5) Install MTB seals and any spacers per chart below onto the spindle assemblies:



BB type	BSA	BB30, PF30, OSBB 2011 & up	OSBB Specialized 2009, 2010 only	BB-91 Shimano	BB-95 Trek
Cover Spacers	None	None	None	Yes	None
Seal Mfg.	Lightning	Lightning	Enduro	Lightning	None
Seal Cover	Lightning	Lightning	Enduro	Lightning	None
LH Spacer	None	None	3.5	None	None
RH Spacer	1.0	1.0	3.5	None	None

NOTE:

Position the MTB crank seals and covers as shown below before installing the spindle assemblies into the bottom bracket bearings.



6) **Drive-Side Crank/Spindle Assembly: Prior to installation, inspect the mating surfaces to ensure they are free from foreign debris.** If installation is made with foreign debris on any part of the mating surfaces it will damage the splines and void any warranty. Do not use any lubricant on the splines, as it would attract foreign objects. The hard anodizing on the spindles acts as a lubricant. The binder bolt has already been pre-lubricated and wrapped with Teflon tape at the factory. Additionally lubricating the bearing lands with high quality grease or Ti-prep assists installation and later removal. Insert the drive-side crank/spindle assembly into the installed drive side bearing.

7) **Non-Drive Side Crank/Spindle Assembly:** Loosen the Allen screw on the adjusting ring and rotate the ring towards the carbon fiber arm as much as possible, this will provide ample axial clearance for the following operation. Insert the included Allen wrench into the drive side crank/spindle assembly hole and engage the binder bolt. Insert the non-drive side crank/spindle assembly into it's bearing. With both crank/spindle assemblies 180-degrees opposed, tighten the binder bolt by rotating the Allen wrench clockwise, the assemblies will begin coming together.
It is extremely important that both crank/spindle assemblies are 180-degrees opposed when the spindle splines engage, failure to do so will damage the high tolerance mating spline surfaces and void your warranty. Torque the binder bolt with the Allen wrench to **35-50 N-m (27-37 ft-lbs).**

8) **Adjusting Ring:** Rotate the ring clockwise until it seats against the inner bearing sleeve. Tighten by hand as much as possible, or use a 36mm spanner if needed (you may need to tighten, then back off approximately 1/8 turn to prevent excessive drag). **Tighten the adjusting ring Allen screw with an Allen wrench so that it is locked in place and cannot rotate.** Spin the installed crank/BB assembly to ensure that it spins freely and that there is no noticeable parasitic torque. Rotation should be smooth with no free play (axial or radial directions), and the arms should freely rotate many revolutions before coming to a stop.

9) **Pedal Installation:** Verify the pedal washers are installed on the carbon arms.
DO NOT INSTALL THE PEDAL WITHOUT THE WASHER, this will damage the carbon fiber material and void the warranty. First lubricate the threads with high quality grease. Next gently **thread your pedals by hand** into the crank arms until they are seated against the arm surfaces. Ensure that the right hand threaded pedal is installed on the drive side and the left hand threaded pedal is installed on the non-drive side. Failure to install the pedals to their correct sides will destroy the crank threads and will void your warranty. Finally tighten the pedals into place.

10) **Rubber Plug:** Install the tapered rubber plug into the drive side access hole. Secure into place using a rubber mallet.

Maintenance

Spyder Replacement: The Spyder and lock-ring are pre-installed at the factory. The Spyder/crank interface is Lightning specific. Any replacement of the Spyder requires a Lightning specific Spyder and lock-ring removal tool.

Bearings: The bearing system used is a high performance sealed cartridge-bearing set that should last a long time. If you ride in adverse conditions we recommend every 100 miles removing the bearing seals and re-greasing the bearings. In the event that your bearings need to be replaced we recommend you obtain a Lightning cup and bearing set. The bearings are pressed into the cups, if you wish to replace only the bearings a bearing press tool is needed.

Bearing Cup Removal: Normally a wrench is required to remove the threaded bearing cups. You can use soft jaw pliers or a strap wrench (Gates Carbon Drive wrench is best) to remove the bearing cups. If you are going to dispose of the cups you can use adjustable "water pump" pliers.

Binder Bolt: Before reassembly the binder bolt threads should be cleaned and re-lubed using Ti anti-seize compound, as the binder bolt is made from titanium, then wrap the binder bolt threads with Teflon tape for a secure installation.

Finish: Lightning cranks have a tough acrylic coating, wash using warm water and non-abrasive soap. Minor scratches can be polished out with rubbing compound. The entire arm can be re-coated with a top quality clear acrylic paint, Krylon Fusion is one good brand. Before re-coating clean first use acetone to assure adhesion.

Stuck Cranks: If the binder bolt is difficult to loosen try the following to loosen it;

A) Spray "Liquid Wrench" inside the crank spindle on both sides of the binder bolt. Let sit for ½ hour.
B) Attempt to loosen the binder bolt using an air impact wrench. Because of the high loads a 3/8" drive socket should be used to engage the 6mm Allen key.

Warranty

Lightning Carbon cranks are guaranteed to be free from defects in material and workmanship or breakage for two years from date of purchase. LCD agrees to repair or replace products it deems to be defective.

Not Covered Under Warranty:

1. Cranks that have been improperly installed or maintained.
2. Cranks that have been modified or poorly maintained.
3. Damage caused by crashing or impacts.
4. Any labor costs associated with removal or installation.
5. Consequential damages or personal injury.
6. Normal wear including riding through water, mud, sand, and dirt.