



GARY FISHER CRONUS



2010 SERVICE INFORMATION

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Service Information

Cronus 2010

The Gary Fisher Cronus is the lightest, strongest frameset we have ever made. To accomplish this, we have used shaped and very thin-walled carbon tubes. Because of its unique features, the Gary Fisher Cronus requires different or additional assembly techniques, provided here:

- + Carbon fiber care
- + Headset bearing installation
- + Front hub and fork integration
- + Bottom bracket bearing installation for a variety of bottom bracket types

Check www.fisherbikes.com for updates.

These instructions are written for an experienced mechanic. If you need further information, refer to your bicycle owner's manual, the instructions in a bicycle mechanic's handbook, or consult your dealer.

Please save these instructions for future reference.



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Working with Carbon Fiber Parts

Carbon fiber parts are different from metal parts, so they require different treatment.

Keep carbon away from sharp edges or excessive pressure

Carbon fiber composite can be damaged by sharp edges or clamping mechanisms which cause a point load, or a high pressure area. The clamps on some parts are not compatible with carbon; some stems, seat post clamps, etc. have sharp edges and/or clamps that create pressure points. Before installing any carbon fiber part, or attaching any component to an existing carbon fiber part, make sure the parts or components are carbon-compatible.

As carbon frames have gotten lighter and lighter, you can now feel movement in the tubes when you squeeze them. This is normal and no reflection of the strength of the frame. However, repeated compression of the sides of the tubes is not good for them, and could eventually lead to frame damage. Do not squeeze the frame tubing with your fingers, and especially never clamp the tubing in any mechanical device, including car racks.

Clean carbon parts before installation

With the interfaces of metal parts, grease is used on the clamping surfaces to prevent corrosion. When making adjustments, always grease the threads and shoulders of bolts. Grease reduces corrosion and allows you to achieve the correct tightness without damaging tools.

However, with most carbon parts you should avoid grease. If grease is applied to a carbon part that is clamped, the part may slip in the clamp, even at the recommended torque specification. The carbon part can be assembled in a clean, dry state. As an alternative, we recommend the following special carbon prep products:

- + Tacx carbon assembly compound
- + Fiber Grip™ carbon fiber assembly gel from Finish Line

On the other hand, the bearing seats of the Cronus frameset do require grease, as explained in these instructions.

Never modify the fork, frame, or components

The parts of the Cronus frameset have been carefully designed to meet the strength and function requirements of safe riding. Modifying these parts in any way may make the bike unsafe. As an example, removing the redundant wheel retention tabs on fork tips could make the fork less functional.

Suspension forks can add stress to a bike frame. Never add a suspension fork to a road bike, or change style and/or length of forks. If you are unsure if a fork is compatible with a frame, call Gary Fisher customer service. Any modification of a frame, fork, or components means that the bike no longer meets our specifications and will therefore void the bike's warranty.

Cutting a carbon fiber steerer

These instructions explain the best practices for cutting a carbon fiber steerer tube.

Warning! A steerer that is damaged by incorrect cutting, installation or maintenance is unsafe and could break, causing loss of control and injury. Follow the instructions carefully.

About cutting carbon fiber

High quality carbon fiber composite behaves like a solid; if the layers of carbon are correctly bonded together, there will be no layers or loose fibers apparent. Your job when cutting the steerer is to avoid damage to the steerer that might separate layers or leave loose fibers. Done correctly, there is no need to dress the steerer with tape before cutting, or to dress it with epoxy after cutting.

Measure twice, cut once

Before cutting the steerer, make sure the steerer length is correct. Remember these requirements:

- + Place at least two spacers under the stem (two 5mm spacers are acceptable).
- + Do not stack more than 40mm of spacers.
- + Use a stem with circumferential clamps; never use a wedge-type stem.

Use the correct tools in the correct manner

- + Do not scratch or score the steerer below the cut line; any damage to the tube surface (scratches, cracks, or torn or loose fibers) can compromise the strength of the steerer.
- + Allow the saw to do the work; instead of cutting cleanly, excessive pressure tends to pull on or tear the carbon.
- + Always cut toward the center of the steerer, which helps prevent splintering of the carbon. This requires turning the steerer in the saw guide. Keep the cut aligned correctly so that the finished cut is even and perpendicular to the centerline of the steerer.
- + Avoid inhaling the carbon fiber dust that occurs during the cutting process.

Materials and tools needed

- + Bench vise
- + Saw guide to create a perpendicular cut (e.g. Park Tool Threadless Saw Guide #SG-6)
- + Hacksaw with Carbide Grit hacksaw blade
- + Fine grit sandpaper (220 - 400 grit)
- + File: smooth tooth or mill bastard

To cut the steerer

1. Clamp the saw guide securely in the bench vise.
2. Clamp the steerer in the saw guide.
 - + Be careful not to crush the steerer; do not overtighten.
3. Using only light pressure on the saw blade, cut about halfway through the steerer (Figure 1).
 - + Be careful not to create loose fibers—on the inside or the outside the steerer.
4. While keeping the cut aligned with the cutting guide, rotate the fork 180 degrees in the guide (Figure 2).
5. Finish cutting the steerer.
6. Loosen the saw guide slightly and push the steerer through until the end can be dressed. Retighten.
7. Working away from the crown, file the outside corner off the cut end of the steerer. (Figure 3)
 - + You can also use sand paper for this step. Sandpaper is less aggressive and a bit more forgiving.
8. With the sandpaper, smooth the end of the steer tube and the inside corner (Figure 4).
 - + This can be done with a “shoeshine” movement or by rotating and reciprocation with the sandpaper.
9. Remove the fork from the saw guide.
10. Inspect for frayed, loose, or broken fibers. Repair as needed.
 - + If, despite your care, some individual fibers break free, treat the fibers with care because if one is pulled or moved, it could “zipper” down the length of the steerer.
 - + If a loose fiber area is small and short, you can repair it. To repair, glue the fiber in place with two-part epoxy. Finish by lightly sanding with 220 or 400 grit sandpaper.
 - + If you see loose fibers extending more than one-half the length of the steerer, have the fork evaluated by Fisher before repairing or installing.

The fork is now ready for you to complete the fork installation.



Figure 1. Use light pressure when cutting.

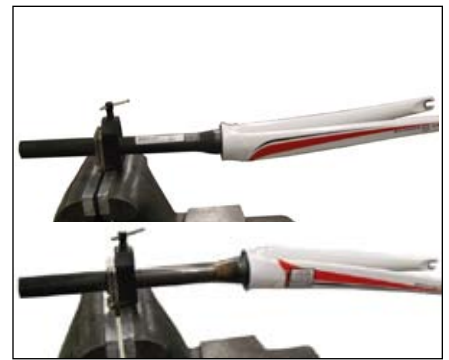


Figure 2. Turn the fork over so that cutting is always toward the center; this prevents loose fibers



Figure 3. File away from the crown (NOT toward it)



Figure 4. Smooth the inside of the steerer with fine-grit sandpaper

Headset Installation

The headset of the Cronus uses a 1.5" lower bearing and 1^{1/8"} upper bearing (Figure 5). The bearings slip-fit into the frame. There are many benefits to this design, and one is that the Cronus headset is a tool-less installation. The bearings are slip fit, so a headset press or fork race setting tool are not needed.

Special Care Information

The fork on the Cronus frame has several unique features that require special care to avoid frame damage:

- + With a carbon steerer, do not use a star-fangled nut; use only the compression nut assembly supplied with the fork.
- + Do not cut or machine the fork crown or head tube; never use facing tools.
- + Do not use a hammer to install the bearings.
- + Make sure the stem clamp is designed correctly and is free of burrs.
- + If you choose to cut the steerer, follow all normal procedures and cautions regarding carbon fiber composite parts. If you are not familiar with these procedures, consult your dealer.

Tools and materials required

- + Top cap assembly
 - For carbon steerer: Compression nut assembly PN 408118
- + Stem
- + Optional headset spacers, maximum of 40 mm including bearing cover (Figure 18)
- + Bearing cover, conical

Aluminum	5 mm	PN 404691	15 mm	PN 404689
Carbon	5 mm	PN 404690	15 mm	PN 404687
- + Shims, 1mm
- + Centering washer
- + Upper bearing, 1^{1/8"}

Steel	PN 271111
Stainless steel	PN 271112
- + Lower bearing, 1.5" PN 290413
- + Fork
- + Rock "N" Roll Super Coat grease
- + 4 and 5 mm allen wrenches
- + Torque wrench

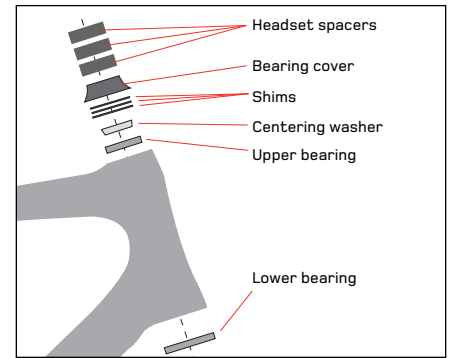


Figure 5. Cronus headset parts and spacers

To install the bearings

1. Apply a light coat of grease to the inner race of the lower bearing.
2. Install the bearing on the steerer (Figure 6).
 - + The bearing is symmetrical, so either side is "right-side up."
3. Apply a liberal coat of grease to the bearing seats of the head tube, both top and bottom (Figure 7).
4. Slide the steerer (with the bearing installed) through the head tube (Figure 8).
5. Slide the upper bearing down the steerer and into the frame.
6. Slide the centering washer onto the steerer (Figure 9).



Figure 6. Lower bearing on fork crown



Figure 7. Greasing upper bearing saddle



Figure 8. Inserting the fork through the head tube



Figure 9. Slide the centering washer onto the steerer

To install the shims, bearing cover, and spacers

Fisher installs three 1mm shims between the centering washer and the bearing cover to ensure an adequate space between the bearing cover and the top of the head tube. There should be at least 0.5 millimeter space to prevent contact or interference.

1. Slide the three shims onto the steerer.
2. Slide the bearing cover onto the steerer (Figure 10).
3. Measure the gap between the head tube and the bearing cover.
 - + In some cases, all three shims may provide more clearance than necessary. In this case, remove shims until there is only one millimeter of space between the head tube and the bearing cover (Figure 11).
4. Slide the headset spacers and the stem onto the steerer.
5. Install the headset top cap and adjusting bolt.
 - + For a carbon steerer, do not use a star-fangled nut. Use the special adjusting plug.
6. Adjust the headset.
 - + The Cronus headset uses an angular contact bearing system, so the headset will rotate freely with a wide range of tension. Make sure there is no free play, but do not overtighten the bearings because they might wear prematurely.
7. Tighten the stem clamp bolts to the manufacturer's recommendation.
8. Follow the steps in "Inspecting the Headset."



Figure 10. The bearing cover and one spacer on the steerer

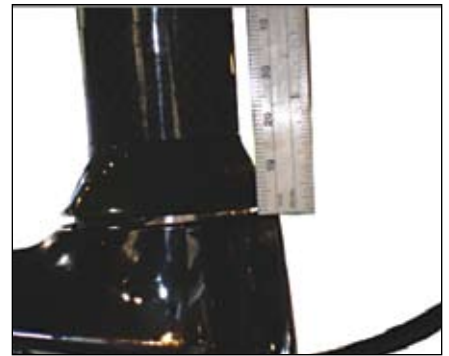


Figure 11. Measure the distance from the head tube to the bearing cover

Inspecting the Headset

Once a month inspect the headset of your bicycle to see that it is not loose, nor too tight. If your headset bearings are loose or too tight, do not ride the bicycle. Readjust the bearings or take your bike to your Gary Fisher dealer for service.

To check is the headset is too loose

1. Stand over the top tube of your bicycle with both feet on the ground.
2. Apply the front brake firmly while you rock the bicycle forward and backward.
3. Look, listen, and feel for looseness of the headset bearings.

To check is the headset is too tight

1. With the front wheel off the ground, slowly rotate the fork and handlebar to the right and left.
2. Look, listen, and feel for any grinding noises, or stickiness or binding at any point in the rotation.

Fender Installation

This section explains how to install front and rear fenders on a Cronus using the accessory dropout adapters and custom brake attachment nuts. Each dropout adapter, or “eyelet,” is a special screw with an eyelet. The brake attachment nut includes a bolt that threads into the nut.

Description	Part number
Custom dropout eyelet w/locknut, set of four	
Eyelet (2)	295468
Locknut (2)	300381
Custom brake nut w/inside screw, set of two	
Nut (FT)	297424
Nut (RR)	297728

Installing the eyelets

1. With a 25mm hex, remove the plugs that cover the threaded holes in the rear dropouts and fork tips (Figure 12).
2. Thread a locknut onto each eyelet, and thread the eyelet into the dropout (Figure 13).
3. Align the eyelet and secure its position by tightening the locknut.

Attaching the bridge clips

1. Loosen and remove the interior screw from the brake nut (Figure 14).
2. Position the bridge clip and place the interior screw through the attachment hole (Figure 15), but do not tighten.

Continued next page



Figure 12. Threaded hole in left rear dropout



Figure 13. Eyelet with locknut installed in dropout



Figure 14. Removing interior screw from brake nut



Figure 15. Fender bridge clip held by interior screw

Finishing the installation

1. Attach the foot of the rear fender.

If the fender has a clip instead of a hole, remove the clip fastener with a drill. If necessary, use the drill to enlarge the empty hole.

2. Place a screw through the hole in the foot of the fender and thread it into the frame (Figure 16). Tighten to 40-60 Lb•in (4.5-6.8 Nm).
3. Put the wheels back onto the bike.
4. Attach the fender struts to the fenders and eyelets (Figure 17).
5. Adjust the struts for clearance and centering around the tire.
6. Tighten all the hardware: the bridge clip mounting screws, the strut attachments at the eyelets, and the strut adjusters at the fenders.



Figure 16. Screw holding foot of fender to frame



Figure 17. Fender strut attached to eyelet

FCC Steering System

The Cronus uses the FCC (Fisher Control Column) with a special front hub that is mated to the front fork. This mating creates a unified structure that is extra strong and extra stiff, which makes the bicycle corner and handle better. The result is a hub/fork interface that is 25% stiffer. And with a weight penalty of a few grams at most.

Wider hub flanges

One way to increase handling precision is to use a front wheel that is stiffer laterally. To make the Cronus front wheel stiffer, we have increased the width of the hub flanges (Figure 18). This increase in flange width spreads out the spokes, increasing the bracing angle of the spokes. A wider bracing angle makes the front wheel stiffer laterally with no increase in weight.

The wider bracing angle requires that the fork legs be slightly wider so that they do not contact the spokes. The wider stance of the legs also increase lateral stiffness, so that part is a win-win.

There is a downside, however. In a race, you might need a spare front wheel. This is not a problem because the Cronus uses a standard 100mm OLD (Over Locknut Dimension) hub. Any wheel in the follow vehicle will work fine. But your Cronus wheel will not work in a different bike because the hub flanges or the spokes can contact the blades of a "standard" fork. The consequences of this type of contact should be obvious.

Large-diameter end caps on hub

Another way to increase steering precision is to reduce fork leg "twist" that occurs as the fork is loaded laterally and torsionally, like what occurs when the bike is cornering on anything less than a perfectly smooth surface.

On most wheels, the biggest source of this twist is the movement between the fork tips and the hub, even with the quick-release correctly tightened. The easiest way to reduce this motion is to increase the contact area between the hub end faces and the fork tips. That is exactly what we did with the Cronus (Figure 19). The larger end faces create a "block" for the fork tips to rest against. We also gave the fork custom, over-sized faces to mate with this special hub.

Again, there is a downside. You can still use a wheel from the race vehicle, but your Cronus wheel can not be used with a different fork. The large faces of the FCC might completely miss the dropout face on a different fork such that engaging the quick release can put a bending load on the hub axle and damage the bearings.

Do not put the FCC front wheel in another bike

The hub flanges or the spokes of the Cronus front wheel can contact the blades of a "standard" fork. The consequences of this type of contact should be obvious

The large faces of the FCC might completely miss the dropout face on a different fork such that engaging the quick release can put a bending load on the hub axle and damage the bearings



Figure 18. Wide stance of hub flanges, and outboard placement of fork legs relative to the dropouts



Figure 19. Large diameter hub end faces mate to oversized fork tips

Crankset Installation

SRAM GXP

These instructions explain how to install a SRAM/TruVativ/Bontrager GXP crankset (Figure 20) in a new Cronus. To complete the installation, you will also need the SRAM instructions, available at: http://www.sram.com/_media/techdocs/2005_gxp-05-r5-e.pdf

Tools and materials required

- + Crankset and bottom bracket
- + 8 mm allen wrench
- + Bearing installation tool - PN 404694
- + Rock "N" Roll Super Coat grease
- + Bottom bracket parts
- + TruVativ GXP installation instructions
- + Do not install axle shield that comes in kit 404700

Part description	SRAM
Kit	404700
Ceramic kit	411814
Drive side parts	
Bearing	281824
Ceramic Bearing	293617
Seal	281820
Wave washer	282866
Non-drive side parts	
Bearing	282864
Ceramic Bearing	293618
Seal	282865

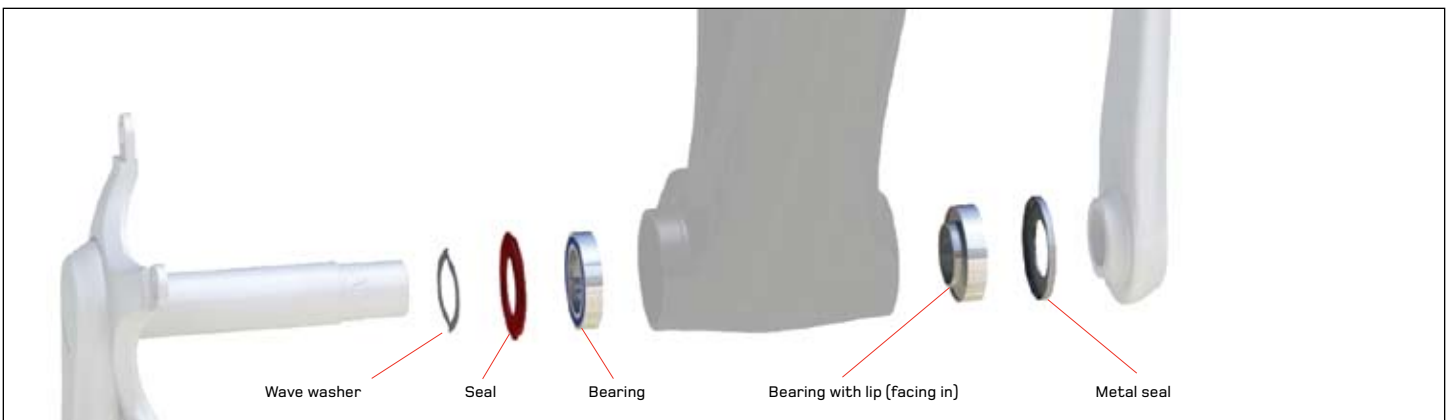


Figure 20. SRAM bearing set

To install the bearings

1. Apply a liberal coat of grease to the contact surfaces of one bearing and the drive side of the bottom bracket shell (Figure 21).
2. Slide a bearing onto the installation tool.
 - + Either side of the drive-side bearing is the "right side." The non-drive bearing on GXP systems has a lip (Figure 22). Install the bearing so that the lip faces in.
3. Press one bearing into the drive side of the bottom bracket shell (Figure 23).
 - + To remove the installation tool, press the release tab.
4. Repeat steps 1-3 for the other bearing on the non-drive side.



Figure 21. Greasing the bearing and the frame saddle



Figure 22. Grease on the frame and the non-drive side bearing (with the lip facing in)



Figure 23. Pressing the bearing into the frame

To install the drive-side crankarm

When handling the seals, avoid bending them. A bent seal will rub on the bearing, creating drag.

1. Apply a light coat of grease to the bearings on the face and the axle contact surface.
2. Apply a light coat of grease to the metal inside of one bearing seal (Figure 24).

Continued



Figure 24. Greasing the bearing covers

3. Install the wave washer and with the grease facing up, slide the bearing seal onto the axle (Figure 25).
4. Apply a light coat of grease to the bearing contact area of the axle (Figure 26).
 - + The grease areas should be about 1 inch (25 mm) wide. On the drive side, start at the bearing seal. On the non-drive side, start at the splines and apply toward the drive side of the axle.
5. Insert the axle through the drive-side bearing in the bottom bracket (Figure 27).

To install the non-drive side crankarm

1. Apply a light coat of grease to the inside of the metal bearing seal.
2. With the grease side toward the bearing, slide the bearing seal onto the axle (Figure 28).
3. Follow the TruVativ GXP installation instructions to complete to install the non-drive crank arm.
4. Tighten the crank bolt to 420-480 Lb•In (48-54 N•m).
5. Follow the steps in "Inspecting the bottom bracket."

To remove the bottom bracket bearings

The Cronus bottom bracket bearing system is designed to be a slip fit. However, after the first installation some bearings might be tight. If the bearings do not easily come out by hand, you may use the following method to remove them.

1. Slide the crank axle into the bearing so that the bearing is over the non-drive side of the axle, about 1 inch (25 mm) from the non-drive end.
2. Gently rock the axle while you pull the axle out.

Inspecting the bottom bracket

Every 3 months check the bottom bracket adjustment.

To check the bottom bracket bearing adjustment

1. Lift the chain from the chainrings.
2. Rotate the crank so that one of the arms is parallel to the seat tube.
3. Put one hand on the crank arm and one hand on the seat tube, and attempt to move the crank arm laterally toward and away from the seat tube.
4. Spin the cranks.

If the crank feels or sounds loose, or if the motion stops abruptly or you hear a grinding noise coming from the bearings, readjust the bearings or take the bike to your Gary Fisher dealer.



Figure 25. Sliding the wave washer and bearing cover onto the axle



Figure 26. Greasing the axle



Figure 27. Sliding the axle through the bearings



Figure 28. Metal bearing cover in place over the bearing

Shimano HollowTech

These instructions explain how to install a Shimano HollowTech (Figure 29) in a new Cronus. To complete the installation, you will also need the Shimano instructions, available at: http://techdocs.shimano.com/media/techdocs/content/cycle/SI/Dura-Ace/FC-7800-7803/SI_1F30H_En_v1_m56577569830605111.pdf.

Tools and materials required

- + Crankset and bottom bracket
- + Shimano FC16 crank arm installation tool
- + 5 mm Allen Wrench
- + Bearing installation tool PN 404694
- + Rock "N" Roll Super Coat grease
- + Bottom bracket parts

Part description		Shimano
Kit		404699
Ceramic kit		411813
Drive side parts		
	Bearing	281824
	Ceramic bearing	295213
	Seal	281820
	Wave washer	-
Non-drive side parts		
	Bearing	281824
	Ceramic bearing	295213
	Seal	281820

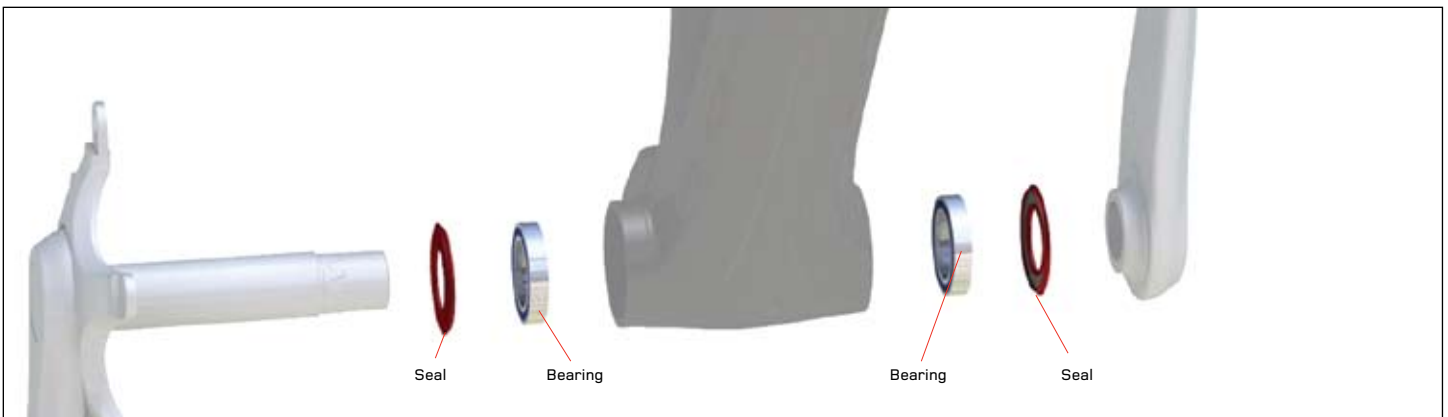


Figure 29. Shimano bearing set

To install the bearings

1. Apply a liberal coat of grease to the contact surfaces of one bearing and the drive side of the bottom bracket shell (Figure 30).
 - + Either side of the bearing is the "right side."
2. Slide a bearing onto the installation tool.
 - + To remove the installation tool, press the release tab.
3. Press one bearing into the drive side of the bottom bracket shell (Figure 31).
4. Repeat steps 1-3 for the other bearing on the non-drive side.



Figure 30. Greasing the bearing and the frame seat



Figure 31. Pressing the bearing into the frame

To install the drive-side crankarm

When handling the seals, avoid bending them. A bent seal will rub on the bearing, creating drag.

1. Apply a light coat of grease to the bearings on the face and the axle contact surface.
2. Apply a light coat of grease to the metal inside of one bearing seal (Figure 32).
3. With the grease facing up, slide the bearing seal onto the axle (Figure 33).
4. Apply a light coat of grease to the bearing contact area of the axle (Figure 34).
 - + The grease areas should be about 1 inch (25 mm) wide. On the drive side, start at the bearing seal. On the non-drive side, start at the splines and apply toward the drive side of the axle.
5. Insert the axle through the drive-side bearing in the bottom bracket (Figure 35).



Figure 32. Greasing the bearing covers



Figure 33. Sliding the bearing cover onto the axle



Figure 34. Greasing the axle



Figure 35. Sliding the axle through the bearings

To install the non-drive side crankarm

1. Apply a light coat of grease to the inside of the other bearing seal.
2. With the grease side toward the bearing, slide the bearing seal onto the axle (Figure 36).
3. Align the non-drive crank arm with the groove on the axle and slide the crank onto the axle.
 - + The non-drive crank arm should point 180 degrees opposite of the drive-side crank arm.
4. With the plastic installation tool, press the crank onto the axle (Figure 37) as far as it will go.
5. Release the installation tool and spin the cranks 10 to 20 revolutions.
6. Follow the Shimano instructions to complete the installation.
7. Follow the steps in "Inspecting the bottom bracket."

To remove the bottom bracket bearings

The Cronus bottom bracket bearing system is designed to be a slip fit. However, after the first installation some bearings might be tight. If the bearings do not easily come out by hand, you may use the following method to remove them.

1. Slide the crank axle into the bearing so that the bearing is over the non-drive side of the axle, about 1 inch (25 mm) from the non-drive end.
2. Gently rock the axle while you pull the axle out.

Inspecting the bottom bracket

Every 3 months check the bottom bracket adjustment.

To check the bottom bracket bearing adjustment

1. Lift the chain from the chainrings.
2. Rotate the crank so that one of the arms is parallel to the seat tube.
3. Put one hand on the crank arm and one hand on the seat tube, and attempt to move the crank arm laterally toward and away from the seat tube.
4. Spin the cranks.

If the crank feels or sounds loose, or if the motion stops abruptly or you hear a grinding noise coming from the bearings, readjust the bearings or take the bike to your Gary Fisher dealer.



Figure 36. Pressing in the second bearing cover



Figure 37. Pressing the crank arm onto the axle

Campagnolo UltraTorque

The Cronus uses a special bearing system that has no parts that thread into the frame. Instead, the bearings are a slip-fit into the frame. However, the Campagnolo UltraTorque system requires you to attach bearing supports (seal seats) to the bottom bracket shell of the Cronus (Figure 38). This section explains how to do that.

The seal seats might fit into the frame tightly. In this case, you might need to tap the cups with a soft-faced mallet. However, do not use a hammer or bearing press to install the bearings into the frame. If the bearing fit is too tight, make sure the seal seats are clean and free of debris.

Tools and materials required

To complete the installation, you will also need the Campagnolo instructions, available at: http://www.campagnolo.com/pdf/7225306_Ultra_torque_05_07.pdf.

Also read the warning: http://www.campagnolo.com/pdf/7225365_warning_Ultra_Torque_0607.pdf

- + Crankset and bottom bracket (bearings come pressed onto the axle halves)
- + Plastic crank arm installation tool
- + Loctite® 638 retaining compound, TCG 408082
- + Loctite® primer 7649, TCG 408083
- + 5 mm Allen Wrench
- + Rock "N" Roll Super Coat grease
- + Bottom bracket parts

Part description		Campagnolo
Kit		407383
Drive side parts		
	Bearing	Campy part
	Seal seat	281825
	Washer	281826
Non-drive side parts		
	Bearing	Campy part
	Seal seat	281825
	Wave washer	281827
	Washer	281826

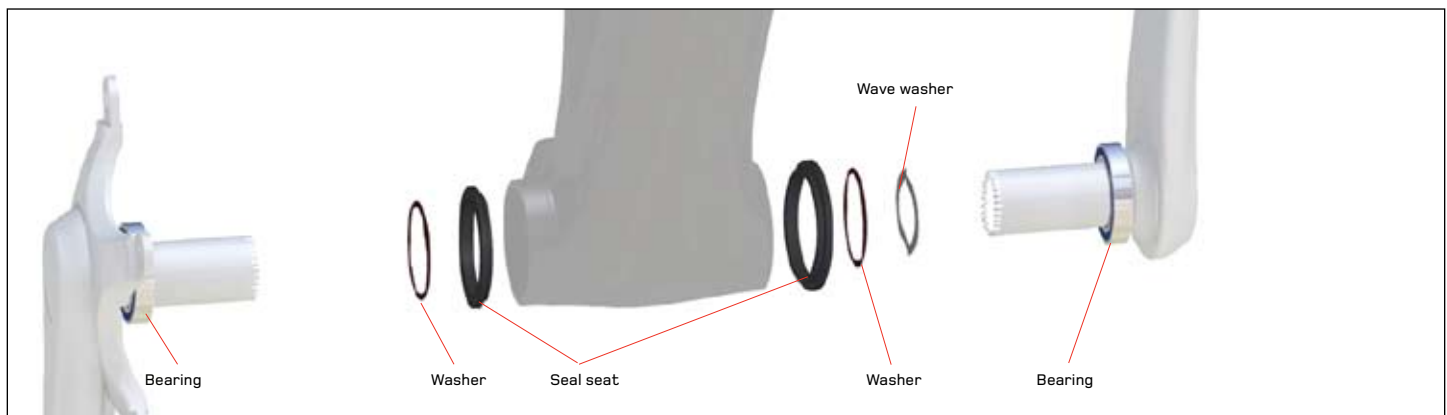


Figure 38. Campagnolo bearing set

To install the seal seats

1. Clean all surfaces to be bonded (bottom bracket shell, seal seats) with alcohol wipes or similar (Figure 39).
2. Apply a thin film of Loctite Primer to the outer step of the bearings cups and the outer shoulder of the bottom bracket shell (Figure 40). Allow the primer to evaporate completely.
3. Apply Loctite 638 to the faced of the seal seat that contacts the bottom bracket shell.
4. Press the seal seat into the frame (Figure 41). If needed, tap lightly with a soft-faced mallet.

+ Let the Loctite cure for at least 24 hours before inserting the bearings.



Figure 39. Cleaning bonding surfaces with an alcohol wipe



Figure 40. Applying Loctite primer to the outer step of the bearing cups



Figure 41. Inserting the bearing cups into the bottom bracket shell

To install the non-drive side bearings

The non-drive side bearings are part of the crankarm.

1. Insert a washer into the non-drive side seal seat.
2. Apply a liberal coat of grease to the contact surfaces of the bearing (Figure 42) and the non-drive side seal seat (Figure 43).

Continued



Figure 42. Greasing the bearings

3. Insert the Wave washer into the non-drive side seal seat (Figure 44).
4. Slide the non-drive side axle through the seal seat and bottom bracket shell (Figure 45).

To install the drive side bearings

The drive-side bearings are attached to the crankarm.

1. Insert a washer into the drive side seal seat.
2. Apply a liberal coat of grease to the contact surfaces of the bearing (Figure 42) and the drive side seal seat (Figure 43).
3. Slide the drive side axle through the seal seat and bottom bracket shell.
4. Line up the splines of the bottom bracket axle and press the axle together. If necessary, tap the ends together with the heel of your palms.
5. Insert the crank bolt from the drive side (Figure 46) and tighten to 380 Lb•In (43 N•m).
6. Follow the steps in "Inspecting the bottom bracket."

To remove the bottom bracket bearings

With the Campagnolo system, each of the two bearings are pressed onto one of the halves of the bottom bracket axle. To remove the bearings, follow the Campagnolo service instructions.

Inspecting the bottom bracket

Every 3 months check the bottom bracket adjustment.

To check the bottom bracket bearing adjustment

1. Lift the chain from the chainrings.
2. Rotate the crank so that one of the arms is parallel to the seat tube.
3. Put one hand on the crank arm and one hand on the seat tube, and attempt to move the crank arm laterally toward and away from the seat tube.
4. Spin the cranks.

If the crank feels or sounds loose, or if the motion stops abruptly or you hear a grinding noise coming from the bearings, readjust the bearings or take the bike to your Gary Fisher dealer.



Figure 43. Greasing the bearing cups



Figure 44. Inserting the Wave washer (after the washer) on the non-drive side



Figure 45. Inserting the non-drive side axle



Figure 46. Tightening the axle bolt

FSA MegaExo AL

These instructions and parts are for the aluminum FSA cranks only. The current "B" kit will not work for FSA carbon cranks.

The Cronus uses a special bearing system that has no parts that thread into the frame. Instead, the bearings are a slip-fit into the frame (Figure 47). This section explains how to install the bearings and crankset.

The bearings might fit into the frame tightly. In this case, you might need to tap them with a soft-faced mallet. However, do not use a hammer or bearing press to install the bearings into the frame. If the bearing fit is too tight, make sure the bearings are clean and free of debris.

Part description	FSA
BB90 bearing kit "B"	293227
Drive side parts	
Bearing	300162
Seal	294668
Non-drive side parts	
Bearing	300162
Seal	294668

Tools and materials required

To complete the installation, you will also need the FSA instructions, available at: http://www.road.fullspeedahead.com/downloadfly.aspx?download=downloads/Install_MegaExoAlloy.pdf.

- + Crankset and bearings (bearing shields come pressed onto the bearings)
- + 5 mm Allen Wrench
- + Rock "N" Roll Super Coat grease
- + Bottom bracket parts

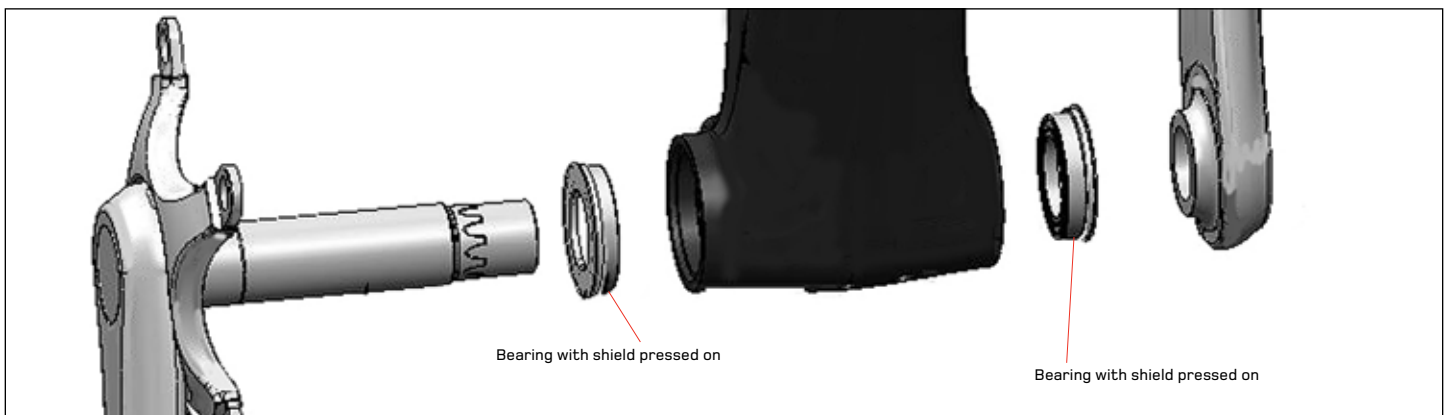


Figure 47. FSA bearing set

To install the bearings

1. Apply a liberal coat of grease to the contact surfaces of one bearing and the drive side of the bottom bracket shell (Figure 48).
2. With the plastic bearing shield facing out, press one bearing into the drive side of the bottom bracket shell (Figure 49).
3. Repeat Steps 1-2 for the other bearing on the non-drive side.

To install the drive-side crankarm

1. Apply a light coat of grease to the axle surface where the bearings will be in contact (Figure 50).
 - + The grease areas should be about 1 inch (25 mm) wide. On the drive side, start at the bearing seal. On the non-drive side, start at the splines and apply toward the drive side of the axle
2. Insert the axle through the drive-side bearing in the bottom bracket (Figure 51).



Figure 48. Greasing the bearing and the frame saddle



Figure 49. Pressing the bearing into the frame with the shield on the outside



Figure 50. Greasing the axle



Figure 51. Sliding the axle through the bearings

To install the non-drive side crankarm

1. Align the non-drive crank arm with the groove on the axle and slide the crank onto the axle.

+ The non-drive crank arm should point 180 degrees opposite of the drive-side crank arm.

2. Install the FSA crank bolt and tighten to their torque specifications (Figure 52).
3. Follow the FSA instructions to complete the installation.
4. Follow the steps in "Inspecting the bottom bracket."

To remove the bottom bracket bearings

The Cronus bottom bracket bearing system is designed to be a slip fit. However, after the first installation some bearings might be tight. If the bearings do not easily come out by hand, you may use the following method to remove them.

1. Slide the crank axle into the bearing so that the bearing is over the non-drive side of the axle, about 1 inch (25 mm) from the non-drive end.
2. Gently rock the axle while you pull the axle out.

Inspecting the bottom bracket

Every 3 months check the bottom bracket adjustment.

To check the bottom bracket bearing adjustment

1. Lift the chain from the chainrings.
2. Rotate the crank so that one of the arms is parallel to the seat tube.
3. Put one hand on the crank arm and one hand on the seat tube, and attempt to move the crank arm laterally toward and away from the seat tube.
4. Spin the cranks.

If the crank feels or sounds loose, or if the motion stops abruptly or you hear a grinding noise coming from the bearings, readjust the bearings or take the bike to your Gary Fisher dealer.



Figure 52. Pressing the crank arm onto the axle

Cronus Crankset Troubleshooting

This section describes problems that occasionally occur, and possible solutions. If these solutions do not solve a problem, contact Customer Service.

Bearing play in a GXP crank or bottom bracket assembly

The crank feels loose when grasped at the pedal end and rocked side-to-side.

Cause	Solution
<p>Wave washer not compressed fully</p> <p>This is usually caused by insufficient torque on the non-drive crank arm. In rare instances a tolerance stack can be created by the five critical parts: non-drive bearing, drive bearing, drive-side seal, bottom bracket shell, and axle length.</p>	<p>First, verify that the crank has been tightened to 420-480 Lb•In (50-57 Nm). Most issues with play in GXP crankarms are resolved when the arms are properly tightened. If this does not solve the issue, add a 0.5mm washer/spacer (PN 294162) between the wave washer and seal (Figure 53) to increase the bearing preload.</p>
<p>Spline of GXP crankarm is undersized</p> <ul style="list-style-type: none"> + We have seen some variation in the tolerance of GXP crankarms. + If the installation torque is not sufficient, the crank arm will not completely compress the shield and bearing race. 	<p>Remove the crankarm and re-install with plenty of grease. Verify that the crank has been tightened to 420-480 Lb•In (50-57 Nm).</p> <p>Re-check the bearings after installation. The GXP axle spline is tapered, so it requires that the crank be completely tightened to seat on the axle.</p>

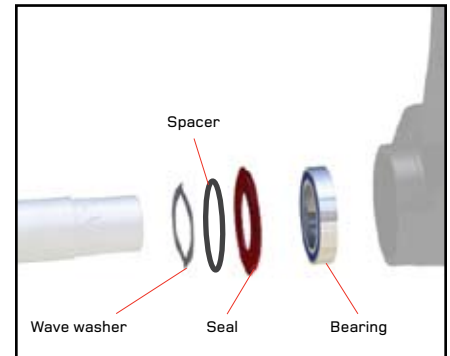


Figure 53. SRAM bearing set

Crank is rubbing or there is excessive drag

If you notice that the crank arms rotate poorly, there are several possible issues.

Cause	Solution
<p>Out of spec or bent non-drive metal seal</p> <ul style="list-style-type: none"> + The inside chamfer of the metal seal (Figure 54) rubs on the outer race of the bearing. + The metal seal deforms under the compressive load of the non-drive arm and rubs on the outer race of the bearing. 	<p>Install a new metal seal (same Part Number: 282865). We have revised the metal seal by adding a ring of material, 0.3mm thick, to the seal around the inner diameter. This will move the outer edge of the seal away from the bearing.</p>
<p>Bearing not seated properly</p> <ul style="list-style-type: none"> + A tight bore can cause the installer to think the bearing is seated when it is not. 	<p>When properly installed the bearing will not sit even with bottom bracket shell.</p> <ul style="list-style-type: none"> + Enduro bearing: 0.75mm inside the shell. + GXP non-drive bearing: 0.25mm outside the shell

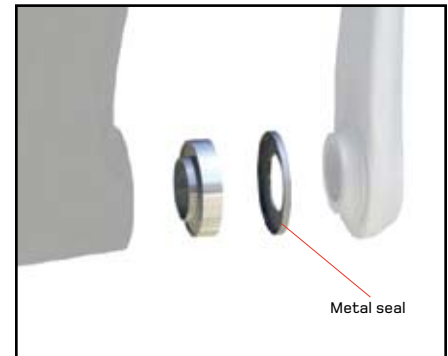


Figure 54. SRAM bearing set

GXP triple crankset can't be properly preloaded

Although some cranksets change the arm configuration to add clearance for a third chainring, the GXP crankset uses a longer axle. Without additional spacers, a longer axle will not compress the bearing..

Cause	Solution
<p>Different axle lengths require different spacers</p> <p>Triple GXP crank axles are 5mm longer than doubles.</p>	<p>Install a 5mm thick spacer (Part Number 291276) between the wave washer and the red bearing seal (Figure 55).</p>

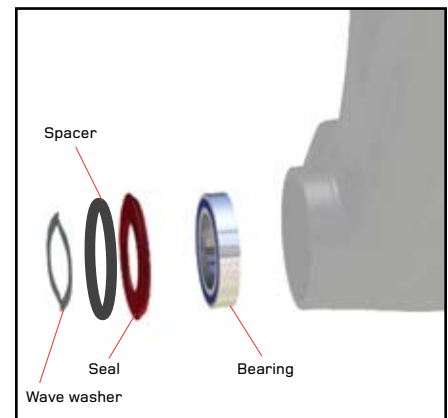


Figure 55. SRAM bearing set

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