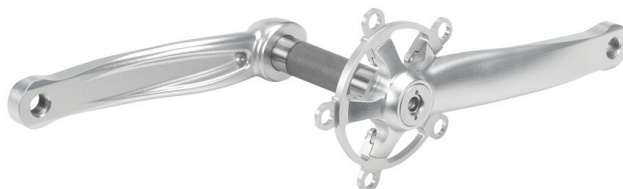




Mr. Whirly Crank and Armset Installation Instructions



Thanks for purchasing a Mr. Whirly crankset or armset. We don't have to tell you it's one of the most versatile cranks going. With proper installation, maintenance, and care this crank will offer you many years of durable performance. If you do not have proper tools, stop now. If people have told you that you have two left thumbs, if you have repeatedly ruined in whole or in part other items you have worked on, if some of the words in these instructions are foreign to you, or if you are a known hamfist when it comes to mechanical aptitude, stop where you are and pony up the cash to have a professional bicycle mechanic assemble and install your Mr. Whirly. You, the shop, and the crank will all be happier that way. Plus, if you screw something up, it's worse than being a knucklehead. Improper assembly and/or installation greatly increases the chance that something will fail, and that you could get hurt. Recognizing this now is a sign of intelligence. However, if you have the necessary tools, knowledge and experience, or if you just want to bone up on your learnin', read on.

Getting Started

The first portion of these instructions covers the assembly of a complete crank from component pieces. If you have a fully assembled crankset and you just want to put it on your bike and ride, skip ahead to the section titled Installing The Bottom Bracket & Crank.

First, make sure you got all the stuff you should have.

Armsets include:

- (A) 2.5mm Bearing Cup Spacers (qty 3)
- (B) Non-drive Side Pinch Bolts (qty 2)
- (C) Pedal washers (qty 2)
- (D) Non-Drive Side Bearing Pre-Load Cap (qty 1)
- (E) Driveside Arm Stop Washer (for use between arm and spindle) (qty 1)
- (F) Driveside Crank Arm Bolt (qty 1)
- (G) Driveside Crank Arm Plastic Washer (for use between F & H) (qty 1)
- (H) Driveside Crank Arm Removal Cap (qty 1)
- (I) 5mm Chainring Bolt Spacers (qty 5)
- (J) 16mm Steel Chainring Bolts (qty 5)
- (K) 8mm Steel Chainring Bolts (qty 5)
- (not pictured) Drive Side Crank Arm w/Surly Logo
- (not pictured) Non-Drive Side Crank Arm w/Surly Logo



PLEASE NOTE: Chainring bolts and spacers to mount the spider to the drive arm are supplied with armsets, in addition to assembly hardware. If you have purchased an armset, you still need to supply: one set of outboard-style bottom bracket bearings; the correct Mr. Whirly spindle to fit your frame (short for 68&73mm shells or long for 100mm/Pugsley shells); a Mr. Whirly spider (available in 94/58mm BCDm 104/58mm BCD, & 110/58mm BCD); a chainring or chainrings; and double or single ring mounting bolts.

Cranksets are sold mostly assembled. Uninstalled hardware in a crankset box should include: a bearing cup set (not pictured), quantity three 2.5mm cup spacers (Fig. 1, piece A), a Mr. Whirly spindle (not pictured), and pedal washers.

HEY!

- Before starting assembly, there are some things we strongly recommend to ensure a long, happy life for your Mr. Whirly crank:
- Lightly grease ALL metal-to-metal interfaces. This includes bolt threads, even if they are coated with thread-lock.
 - Use a torque wrench to tighten all hardware to the specification recommended. Don't have a torque wrench? Buy one. This is important.
 - Check all hardware from time to time, especially during the first 100 miles (approx). During this break-in period some hardware may become loose and need re-tightening.

Failing to do any of these things could lead to equipment failure, and you could get hurt! No one wants that. Well, maybe someone does, but not us.

Assembling The Crank

- 1) Place Mr. Whirly spider on drive side arm, aligning the "gap" in the spider to the arm. **The writing on the spider should face INBOARD.** The spider should seat easily into place and the holes in the mounting tabs of the spider should align perfectly with the spider mounting holes in the arm.
 - A) If running the crank as a single or double ring system, use the shorter 8mm chainring bolts (Fig. 1, piece K).
 - B) If using a 'granny ring,' sandwich the supplied 5mm spacers (Fig. 1 piece I) between the spider and small chain ring. Use the longer 16mm chainring bolts (Fig. 1 piece J) to secure assembly to crank arm. Any granny ring you choose needs a 58mm bolt circle diameter (BCD) regardless of the BCD of the other chainrings.
- 2) Lightly grease chainring bolt threads, then insert and thread in.
- 3) Using a torque wrench with a 5mm Allen bit, tighten spider mounting bolts to **105-135 in/lbs. (12-15 n/m)**, making sure all interfaces are properly seated. Do not substitute aluminum chainring bolts for this assembly. Doing so could result in failure and rider injury.
- 4) Install chainrings following manufacturer instructions.

Installing The Bottom Bracket & Crank

The spline patterns are different on each end of the BB spindle. The non-drive side is 'keyed' to allow installation of the arm in only one direction perpendicular to the length of the spindle. When installing the drive side crank arm be sure to align the extension of the crank arm with the single broad spline, or key spline, on the non-drive side of the spindle. This will ensure that during final assembly the drive and non-drive side crank arms will be correctly oriented to each other.



Key Spline

- 1) Installing Bottom Bracket Cups
 - A) Lightly grease cup threads.
 - B) Place appropriate number of BB cup spacers (Fig 1, piece A) over cup threads (sandwich between cup and frame).
 - For 68mm BB shells, use one spacer on the non-drive side and two on the drive side.
 - For 73mm BB shells, use one spacer on the drive side only.
 - For 100mm BB shells, use one spacer on the drive side only.
 - When using e-type front derailleurs, remove one drive side spacer from the above-outlined requirements.
 - C) Install drive side and non-drive side bottom bracket bearing cups. Pay special attention to the drive side and non-drive side markings on the cups. Using a torque wrench, tighten cups to **310-442 in/lbs (35-50 n/m)**.
- 2) Installing The Crank and Spindle
 - A) Lightly grease drive side spindle splines.
 - B) Place stop washer (Fig.1, piece E) onto drive side of spindle.
 - C) Determine correct alignment of drive side arm on spindle and install drive arm on spindle as far as possible. This may be a tight fit, even greased. (Hint: Install both arms on the spindle prior to mounting them on the frame. Once correct alignment of arms to spindle splines is determined, remove the non-drive arm, then proceed).



D) Attach drive side arm to drive side end of spindle using PTO (power take off) bolt assembly (**Fig 1, pieces F, G, & H**).

- 1) Lightly grease drive arm mounting bolt (**Fig. 1, piece F**) threads.
- 2) Place bolt (**Fig. 1, piece F**) into bolt hole of the arm, the threaded portion facing inboard. Sandwich nylon washer (**Fig. 1, piece G**) between bolt (**Fig. 1, piece F**) and cap (**Fig. 1, piece H**). Thread in and secure cap using a 10mm Allen key. Lightly snug into place. Do not overtighten.

E) Using an 8mm Allen key on a torque wrench, tighten bolt (**Fig. 1, piece F**) to **420-540 in/lbs (48-61 n/m)**.

Note: In order to assure proper tightness, this step is most easily done after arms and spindle are installed, but must be done prior to adjusting the bearings. We'll remind you again later in these instructions.

F) Lightly grease the bearing contact areas of the spindle.

G) With spindle firmly attached to drive arm, insert spindle into bottom bracket, through the bearings. Visually inspect for exposed spindle on the drive side. It may be necessary to lightly tap the crank and spindle assembly into place using a rubber mallet.

H) Lightly grease non-drive side spindle splines and pinch bolt (**Fig.1, piece B**) threads.

I) Insert pinch bolts (**Fig.1, piece B**) into direction-opposed holes at the spindle end of the non-drive side crank arm. Begin to thread in pinch bolts but do not tighten.

J) Install non-drive arm onto spindle. Do not tighten pinch bolts.

K) At this time, tighten or re-check the drive-side arm mounting bolt (**Fig. 1, piece F**). Using a torque wrench with an 8mm bit, tighten bolt (**Fig. 1, piece F**) to **420-540 in/lbs (48-61 n/m)**.

L) Lightly grease threads of the bearing adjustment cap (**Fig.1, piece D**). Install bearing adjust cap (**Fig. 1, piece D**) into non-drive spindle end and adjust bearings using a 5mm Allen key.

• Hey Hercules! The bearing adjust cap is for bearing preload only, like a headset. Tighten to the 'sweet spot' between too tight and too loose. There should be no sideplay in the crank assembly but crank should spin freely, without tight spots. Over-tightening the bearing pre-load cap will result in premature wear and destruction of the bottom bracket bearings.

M) Using a torque wrench with a 5mm Allen bit, tighten pinch bolts (**Fig. 1, piece B**) to **108-132 in/lbs (12-15 n/m)**.

N) Install pedals with pedal washers (**Fig.1, piece C**) sandwiched between arms and pedals.

Finished?

Be sure to periodically check all of the bolts, especially during the first 100 miles or so of riding. During this break in period, any and all hardware could loosen, and this could lead to the crank breaking or you getting hurt. In particular, check the pinch bolts and spider mounting bolts. Be smart. Check your equipment from time to time.

Crank Specs

Ring spacing: 9 speed

Chainline-inner ring: 42.7mm

Chainline-middle ring: 50mm

Chainline-outer ring: 57.3mm

Arms & Spiders: 7075 T6 aluminum

Spindles: Cro-moly steel

Hardware: Aluminum or hardened steel, depending on application. Do not substitute hardware of any other material. Doing so could result in equipment failure, and possibly injury.

Warranty & Contact Info

Your Mr. Whirly arset or crankset is guaranteed to be free of manufacturing defects for one year from the original date of purchase. This means that if we screwed up something in the manufacturing process which resulted in the premature failure of the part, we'll fix or replace it at our discretion. This warranty is for the original buyer and is not transferable. It should go without saying that we won't even consider your warranty problem without a dated proof-of-purchase. As with all Surly products, we wouldn't expect you to treat this item gently but we can't be responsible everything you do to it either. While we purposely build our components with safety and durability in mind and we completely stand behind the strength and integrity of all our products, we're hip to the "just riding along" phenomenon and frankly, we're just not having it.

Surly is not and can not be responsible for products that break when not installed correctly or used inconsistently with the product's design. If you're not sure if something will work the way you want, contact us. If you do destroy your Surly product, fess up and maybe we can get you some replacement parts to keep you riding. Sorry, the finish isn't covered, nor is any damage that happens to you or your other components as a result of any failure of one of our products. Lastly, if you modify or neglect our products, we can't be responsible for them or what might happen to you while you're using them. All potential warranty items should be returned to the original place of purchase, accompanied by a sales receipt. In the unlikely event that this is not possible, call or email us, and we'll do our best to get you riding again.

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