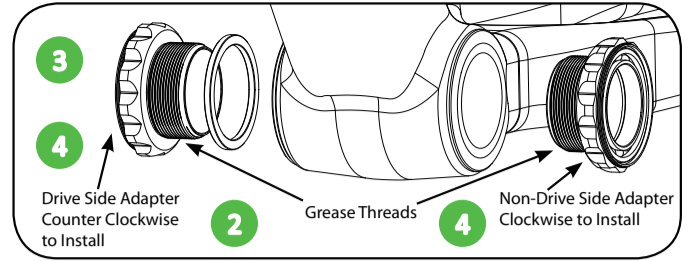
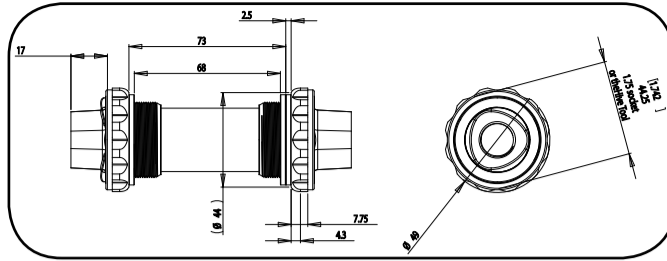
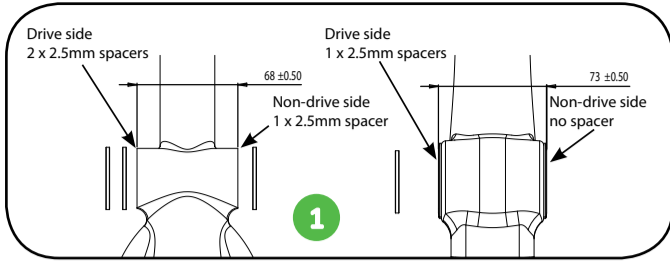


## REQUIREMENTS & BOTTOM BRACKET INSTALLATION



Thanks for purchasing the Fifteen.G crankset! Established by the Hive, Fifteen.G brings innovative bicycle components to the mountain bike realm. In a product world where the latest and greatest gets the most praise, we strive to be a reference point to the industry. Show them how it can be done. Simply, efficiently, responsibly. While riding. Booya.

The Hive is a collective of friends and cyclists contributing their individual talents and perspectives to bring fully developed products and ideas to the two wheeled world. We work with friends, competitors... people from around the world... that share in our philosophy that there is another level possible other than what is available today. The Fifteen.G crankset is only the beginning...stay tuned.

### Frame requirements and other info

The Fifteen.G crankset is compatible with frames using:

- BSA 1.37 x 24TPI Bottom Bracket Threading
- 68mm or 73mm Bottom Bracket Shell width

Your frame may require facing and/or thread chasing. We recommend using the Park™ BTS-1 for chasing and facing, or the Park BFS-1 for facing. Check the Park Tool website for expert instruction on these operations. As always, if you haven't done this before, seek the guidance of a trained professional. You'll sleep easier. Thread chasing is not always required, and will be a judgement call a trained professional should make based on the condition of your threads. If this is going on a sweet handbuilt frame, odds are this has been taking care of by someone who knows their shiznit. If it is a mass produced frame, you will need to inspect for roughness or burrs. Good time to talk to a professional...

### Required Tools

1. Grease, grease gun. Grease guns make everyone's life easier. Easy application and guaranteed to be free from contaminants. Tubs or buckets of grease are great too, just make sure they are covered when not in use. Grease tubs that are open during sawing/grinding/filing, or any cleaning can pickup contaminants that will ruin your components. Seriously.
2. TORQUE WRENCH. 3/8" Drive, capacity of up to about 50 Lbf\*Ft (68 N\*m.) Craftsman™ sells a bending beam style that is dependable, affordable, and can be easily calibrated.
3. the Hive Crankset wrench, or a 12 point 1 3/4" socket and 3/8" to 3/8" adapter. 6 point sockets will not work.
4. 8mm Allen driver w/ 3/8" socket (for torque wrench...you did get one right?)
5. 6mm Allen key for holding chainring nuts in place.
6. 5mm Allen driver w/ 3/8" socket

### Compatibility

#### Singlespeed

- 49.4mm chainline. Works with BMX style thread on freewheels, or cassette type
- 2mm thick chain ring teeth: compatible with 8 or 9 speed chains, as well as 1/8" BMX or SS Specific chains. Pick your chain based on your freewheel.

#### Double or triple chainrings

- 50.0mm chainline. Compatible with all major manufacturer 8 and 9 speed front derailleurs and chains.
- 64-104 BCD chainring mounting. If you choose to use aftermarket chainrings, those are the numbers you need to know to make sure they bolt up correctly.

#### Chainguide

- BB mounted chainguide would take the place of 1 spacer on the drive side of the frame (1 spacer for a 68mm shell or none for a 73mm shell). Check chainguide manufacturer instructions for more precise info. We're not psychic.
- ISCG mounted: check manufacturer's instructions... in most cases, the spacer configuration will not change
- **IMPORTANT:** The Bottom Bracket Adapter dimensions are illustrated above, and are larger than most. This can cause compatibility issues. Check with the chainguide manufacturer before purchasing.

#### Pedals

- Do not exceed 23-25 Lbf\*Ft (31-34 N\*m) when installing pedals.
- Drive Side pedal threads are right handed, Non-Drive Side pedal threads are left handed; the opposite of Bottom Bracket threads. Confused yet?

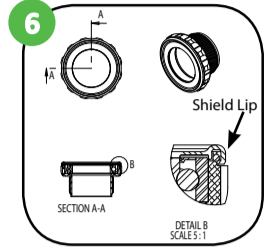
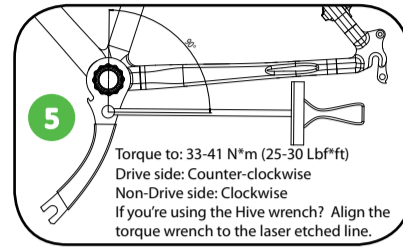
#### Frames

##### 68mm shell

Shell should measure between 67.5 and 68.5mm (2.657 and 2.697 inches). If your shell measures more than this, you will need to face the shell. (Facing is a good idea to ensure that these faces are parallel. Out-of-parallel faces cause accelerated bearing wear. Don't say we didn't warn you.) You will need 2 spacers (measuring 2.5mm, 0.098", thick) on the drive side, and 1 spacer on the non-drive side.

##### 73mm shell

Shell should measure between 72.5 and 73.5mm (2.854 and 2.894 inches) if your shell measures more than this, you will need to face the shell. (Facing is a good idea to ensure that these faces are parallel. Out-of-parallel faces cause accelerated bearing wear. Don't say we didn't warn you.) You will need 1 spacer (measuring 2.5mm, 0.098", thick) on the drive side. That's it.



### Install the BB

1. As described in Section II, you'll need to know the width of your BB shell and choose the appropriate spacers.
2. Remove the external shield from the BB Adapters. You'll put them back on later. Then, grease the threads on both adaptor cups.
3. Thread the adapter cups in hand tight, making sure to go slow and straight. If you feel any resistance, it is a good sign that either the adapter is crooked, or that you may need to chase the threads of your frame. Don't risk it... cross threading results in flying wrenches, bloody knuckles, and a much lighter wallet.
4. Oh, by the way: Drive side (the side of the frame with the chain) tightens counter-clockwise, because it has a left handed thread - like gas lines on your BBQ, 'cause your putting down the gas. Non-Drive side tightens clockwise. Make sense? Did we mention you should have a trained professional doing the installation?
5. Once you are sure that you have the correct number of spacers and everything is peachy, it's time to torque these puppies down. 25-30 Lbf\*Ft (33-41 N\*m)
6. Grease the exposed bearing surfaces. Then, place the bearing shields back where they belong. The shield has a lip on the outer diameter that will overlap with a ridge on the BB adapter. This creates a bit of a labyrinth that resists the intrusion of contaminants and protects against the elements, without extra bearing drag. Wipe away any extra grease.

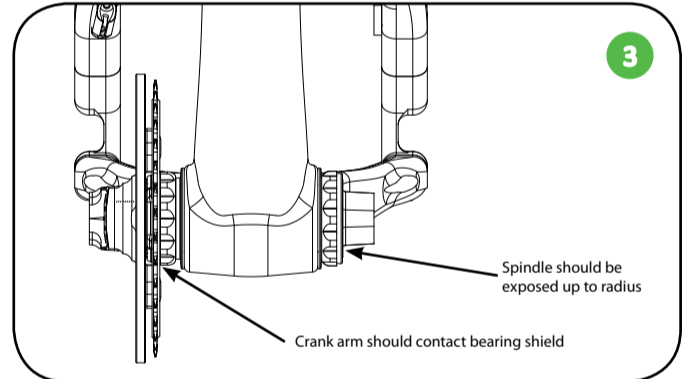
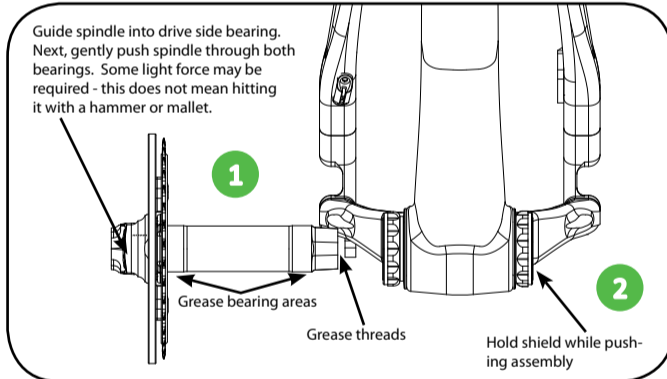
The Fifteen.G crankset is based on a trilobial polygon interface, as established by DIN Standard 32711. We modified it a tad to better suit machining and bicycle crank applications. This shape has been used since WWII starting with tank transmissions. Have you heard of tank belts falling off? We hadn't either. But what this means to you is that this interface has over 70 years of manufacturing research, development and improvement behind it. We didn't invent something to be different, we did our homework and discovered the best possible solution. Rat-a-tat-tat.

DIN 32711 EVO

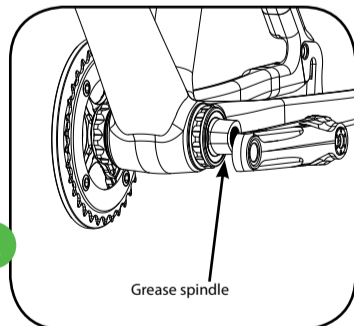
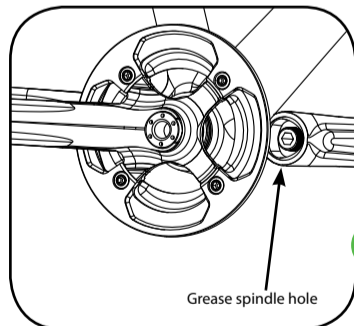
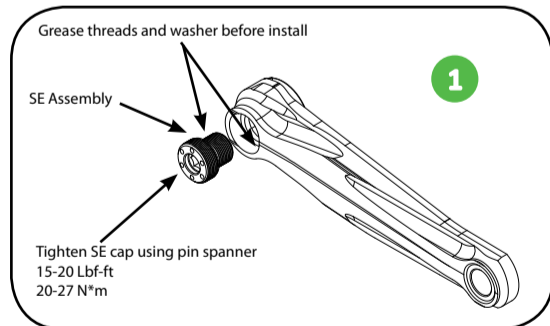
## RIGHT CRANK ARM INSTALLATION

### Install right arm/spindle

1. Grease the bearing race areas and M16 thread on the Right Crankarm/Spindle assembly.
2. Slide spindle through Drive Side bearing. Guide the spindle into the Drive Side bearing, through, and into the Non-Drive Side bearing. Once the polygon end shape enters the Non-Drive Side bearing, hold the Non-Drive Side bearing shield and seal in place with one hand. With the other, apply firm pressure to the spindle interface area of the Right Crankarm. **DO NOT USE A HAMMER OR Mallet.** If there is resistance that feels like a hammer is justified, pull the assembly out, re-inspect all bits and re-grease. When in doubt, more grease more better...
3. The underside of the crank (closest to the spindle) should contact the bearing shield on the Drive Side crank, and the spindle should be exposed on the Non-Drive side up to the radius.

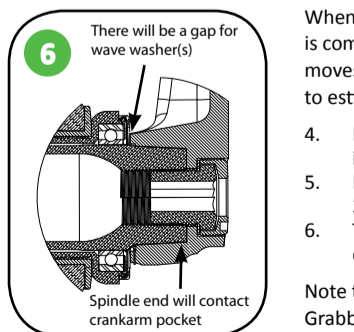
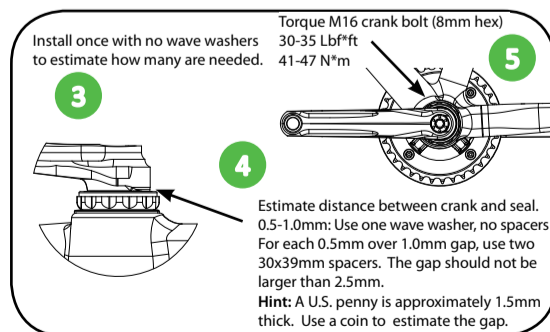


## LEFT CRANK ARM INSTALLATION



### Install left arm

1. The left arm comes with a self extractor assembly already. You will need to install and un-install the crankset once before final assembly. The self-extractor assembly makes this easier.
2. Grease the exposed polygon end shape of the spindle, and the polygon shape (and fastener threads) in the left crank arm assembly.
3. Install the left crankarm - **do not include wave washer.** Tighten the left crankarm bolt (clockwise) to 30-35 Lbf\*Ft (41-47 N\*m). Once the crankarm is installed, there will be a gap between the underside of the crank and the bearing shield. Estimate how big this gap is and make a note of it. (In mm s'il vous plait.)



When the crank is installed, and "finger tight", torque is below 1 Lbf\*Ft, the fastener is turned just until the polygon shape in the crank is completely in contact with the polygon shape on the spindle, we call this preload. It refers to the distance along the spindle the crank moves before it is fully installed. Typically, this will be 1.5-2.5mm. It is very difficult to measure on a complete assembly, so we will need to estimate the final effect. Fifteen.g cranksets come with one wave washer and five crank spacers.

4. Remove the left crank arm by turning the crank bolt counterclockwise until free. Based on your estimate and the diagram above, install one wave washer and the appropriate number of spacers.
5. Re-grease and re-install the left crankarm. With wave washer and spacers in place, tighten the left crankarm bolt (clockwise) to 30-35 Lbf\*Ft (41-47 N\*m).
6. The crank will be fully installed when the end of the spindle comes into contact with the end face of the polygon pocket in the crank. If these faces do not come into contact, there is the potential for your cranks to come loose.

Note that it may be necessary to uninstall and re-install 2 or 3 times, based on the amount of grease, temperature, evil do-ers, etc. Grabbing the end of the left crank by the pedal thread and yanking back and forth (perpendicular to the frame centerline plane) is a good way to tell. If you feel any movement, the spindle is not fully seated.

At this point, most everyone has heard stories of external bearing cranksets coming loose or have a short interface life. In most situations, it is because they were not installed correctly, whether due to error, misunderstanding, or a genuine difficulty in determining what is "correct"... The DIN 32711 Polygon shape has technical superiority because it uses 100% surface area contact. So there are no clearance gaps to assist with manufacturing tolerances, and no areas of contact/no-contact to initiate fretting corrosion. What this means is that if the crank is installed properly, there is no chance for it to come loose... so please, buy a torque wrench... ;)

thehive

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