

Scope Cycling

Artech User Manual



Version 1.0

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1. How to reduce the free-wheel sound from Artech?

Question

I would like to reduce the sound of my Scope Artech wheels while freewheeling.

Answer

Note: Please only use the official engagement grease from Scope (SC2021263) or the silence grease of Scope (SC2022350) and do not use any other type of grease or oil. The use of incorrect grease or oil can cause the engagement system to malfunction.



Scope Engagement Grease (SC2021263)



Scope Silence Grease (SC2022350)

The hub of the Artech rear wheels are equipped with Scope's Diamond Ratchet system. The sound you hear while freewheeling comes from the ratchet mechanism when it is disengaged. The mechanism has two parts that engage when you pedal and disengage when you stop pedalling.

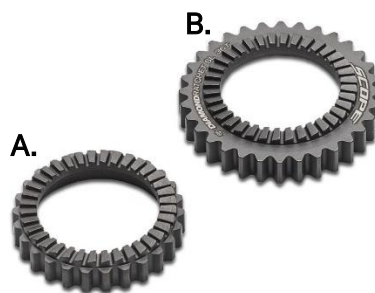
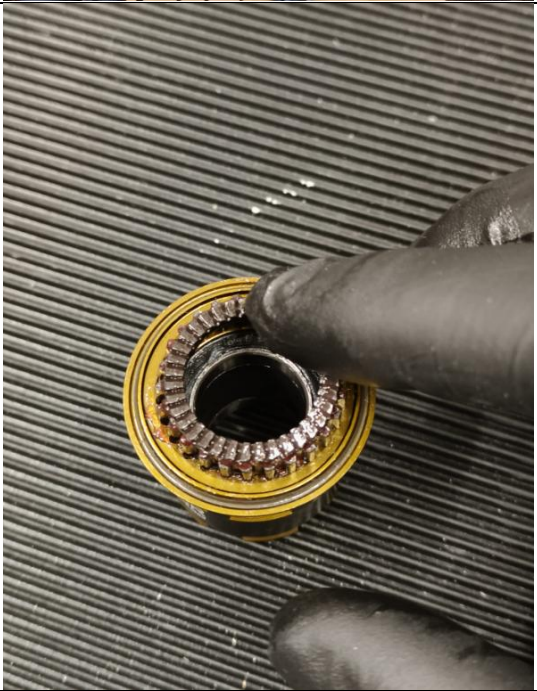


Figure 1: (A) small ratchet part; (B) large ratchet part

In order to reduce the noise, Scope offers Silence Grease (SC2022350). This Silence Grease can be used to replace the regular engagement grease of the Diamond Ratchet system in order to reduce the sound level of the engagement system. The steps to apply the Silence Grease are as follows:

Description	Picture
Remove the rear wheel from your bike by untightening the through axle.	
Remove the end-cap from the drive side, this can be done by pulling the freehub body (including the cassette if mounted) from the hub. The end-cap will come loose and the freehub body (including the cassette) can be taken off the axle of the hub.	
Typically the “small” ratchet will remain to be seated on the backside of the freehub body. If so, please remove the small ratchet from the freehub body by pulling it out of the freehub body.	

Remove the “large” ratchet which is located in the hub shell. Note that the large ratchet could have already come out of the hub shell when removing the body.



Place the large and small ratchet on a clean cloth and remove any old grease and dirt using a dry cloth.



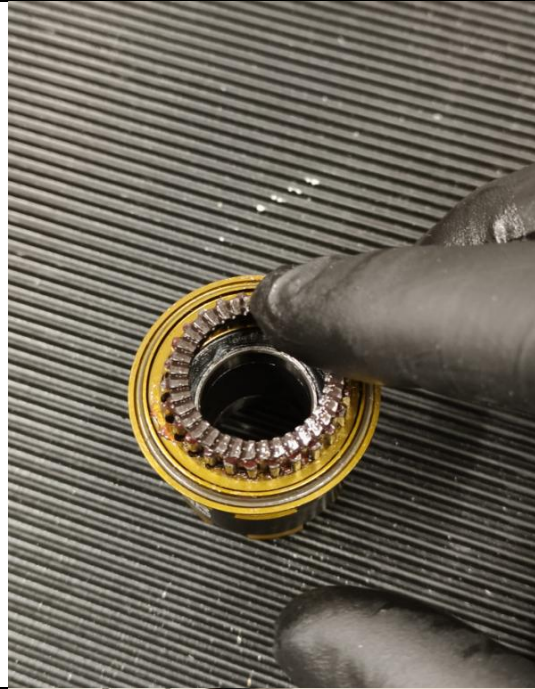
Now take the Silence Grease and apply some of the grease on top of both ratchets. Besides, apply some grease around the ratchets. We recommend to apply about 3 ml of grease, as an indication of the amount of grease please refer to the picture.



Next, first take the large ratchet and put it on the axle. Please note that the face teeth of the large ratchet should face outwards (meaning they point towards the direction of the drive side / cassette side). Next push the large ratchet into the hub shell against the spring. You should feel the spring pushing back the ratchet outwards.



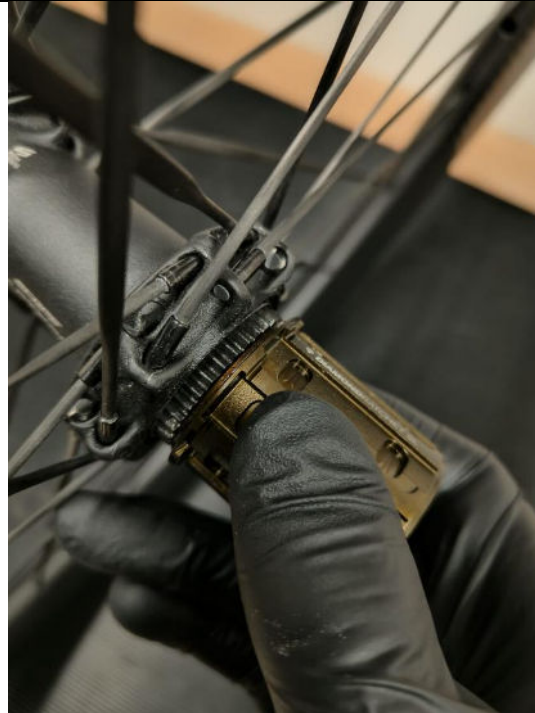
Take the small ratchet and assemble it back into the freehub body. The face teeth of the ratchet should face outwards, meaning that the face teeth should be visible.



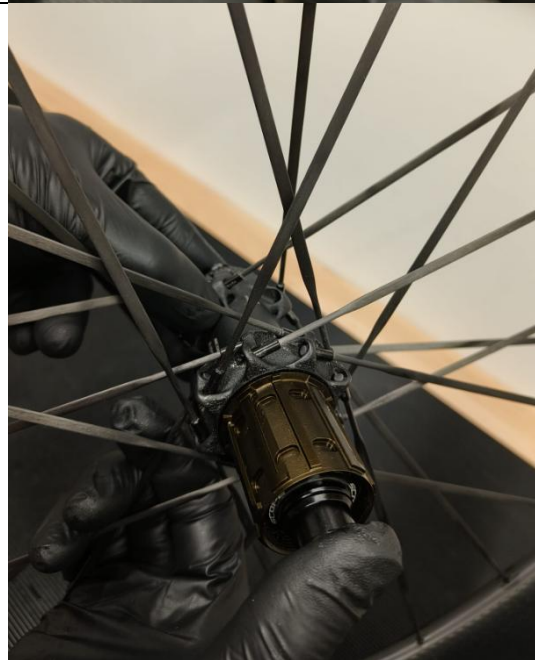
Next, put the freehub body onto the axle. You can guide the freehub body onto the axle by taking the body and focus on the bearings. The bearings should align with the axle, one could use the index finger to center the body on the axle.



Now check whether the large ratchet is still seated in the hub shell, if not please guide the large ratchet back into position by slightly pushing it. Next push the freehub body towards the hub, please note that in case the large ratchet is not seated in the hub or the small ratchet is not seated in the freehub body one should stop pushing the body and first seat both ratchets properly.



Next put back the end-cap back onto the axle. While doing so, hold the axle from the disc side with your other hand. When pushing on the end-cap a clicking noise indicates that the end-cap is mounted correctly.



2.How to remove water from the rim of your wheel?

Question

There is water inside of my rim, is this normal and how can I remove it?

Answer

In cases of heavy rain or very wet conditions it is possible for some water to enter your carbon rims via the spoke and valve holes. Artech wheels do have a rim with a water hole that can be used to remove the water. Please follow the following steps:

1. Remove your wheel(s) from the bike.
2. Identify the location of the water hole. There is one water hole per rim which is located around the valve area on the non-drive side.
3. Hold the wheel such that the water hole is the lowest point, thereby ensure any water at the inside of the rim will leak out. In case there is a substantial amount of water in the rim, you could place the wheel in a similar position on the ground such that the water hole is the lowest point of the wheel.
4. After removing the water from the rim, you can mount the wheel back in your bike.

3.How to clean your wheels

Question

How should I clean my wheels?

Answer

In general, we recommend to clean your wheels with water and soap. It is possible to clean wheels with a high pressure cleaner, but please do not point the nozzle directly at the hub as this can cause water and dirt to enter the hubs. Also prevent any break cleaner from contacting your wheels. Below is our step-by-step guide to clean your wheels:

1. Please remove your wheels from the bike.
2. First clean the cassette, for this you could use a degreaser but please note not to spray the degrease on anything else than the cassette itself. Using a brush you can clean the cogs of the cassette. After cleaning the cassette rinse it off with water.
3. Now you can start to clean the rims and hubs by using a sponge or washing mitt. You may use water in combination with a soap to clean the wheels.
4. For the hub, please use a clean brush to clean the spoke flange area that are hard to reach with a sponge or washing mitt.
5. After cleaning both wheels, rinse them off with water so all soap and dirt is rinsed off.
6. Use a cloth or towel to dry the wheels completely.

4. Where to find the serial number on my Scope wheels?

Question

Where can I find the serial number of my wheels?

Answer

There are multiple methods to identify the serial number of your wheels. First of all please note both the front and rear wheel do have a separate serial number. Each Scope Serial number starts with SC and exists out of 5 or 6 digits, for example SC123456.

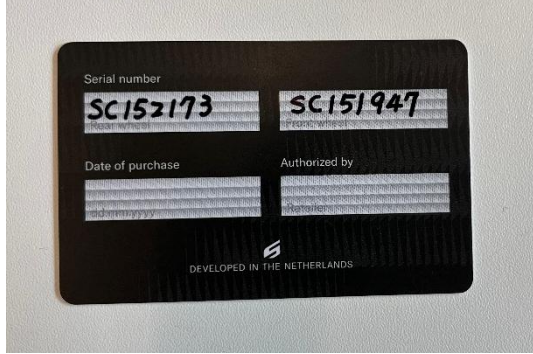
You can find the serial number on the following places:

On the product registration card located on the free-hub body: Each new rear wheel is packaged with a product registration card containing both the serial number for the front and rear wheel.	
On the outer packaging of your wheels: Each Scope carton wheel box has a label including article number and both the serial number for the front and rear wheel.	

On the **tire bed of the rim**, near the valve hole: Please note that you have to remove the rim tape to read this serial number.



On your **card of authenticity (Artech only)**: Each Artech wheel set is delivered with a card of authenticity containing the serial number of the front and rear wheel.



Furthermore, please note that each hub also comes with a unique serial number. The serial number of the hub is located on the flange and exists of a number and letter combination, please refer to below picture. In case it is impossible for you to find the serial number of the wheels, you can always ask Scope to identify your wheels based on the serial number of the hubs as we register each individual component in production.



Figure 2: Serial number on Artech hub

5. How to align your Artech wheels in your bike

Question

It looks like my Artech wheels are not correctly aligned within the bike (for example the wheels are skewed and not in line with the frame). How can I solve this?

Answer

In case your Scope wheels (more specifically your Scope Artech wheels) are not properly aligned we suggest to take the following steps.

1. Visually check whether the front and rear wheel are in line with the frame. You can do so by placing the bike on the ground while keeping the bike level and visually check whether the wheels are in line with the frame. With in line we mean that the front wheel should be sitting straight into the front fork and the rear wheel straight in the frame. As a reference point one can use the head tube for the front wheel and the seat tube or -post for the rear wheel.

***Note:** Please note that most frames nowadays are asymmetric. Therefore we do not recommend to use the fork legs, chain stays and or seat stays as a reference points as it is very hard to determine whether the wheel is in line with the frame.*

In case the wheels are not properly aligned go ahead with the next step.

2. Remove the wheel that is not aligned properly by removing the through axle. After removing the through axle remove the wheel from the fork or frame.
3. Next, inspect whether the end-caps are properly mounted and are free from damage or wear. In case an end-cap is positioned incorrectly (for example skewed) please remove the end-cap. Next check and clean the axle and end-cap and in case of any signs of significant wear replace the parts. Next push the end-cap back on the axle until you hear a click which means the end-cap is securely mounted on the axle.
4. Now we can mount the wheel back in the fork or frame. Take the wheel and mount it within the fork or frame and then push the through axle in position but do not tighten the through axle yet.
5. At this point, we highly recommend to lift the bike from the ground before securing the through axle. The reason for this recommendation is that it is easy to put the wheel in a skewed position when the bike is “leaning” on the through axle and thus the wheel. Therefore, please lift the bike from the ground and give the wheel a spin. The rotation of the wheel ensures that the wheel will be positioned correctly .

6. Now use a torque wrench to tighten the axle until the play is forced out of the system. Never tighten above the frame recommended torque specifications
7. Finally, check whether the wheel is aligned correctly within the fork and/or frame. In case the issue is not solved, please contact us via the contact details as listed in section 7.4 of this document so we can support you in solving the problem.

6. How to eliminate play from my Artech wheels

Question

When my Artech wheel is mounted in the bike I can feel some play on the wheel. Where is this play coming from and how can I solve this?

***Note:** The axle system of the Artech front and rear wheel are developed in such way that it ensures that the wheels run smoothly when installed in the bike without any adjustments. Since the through axles have a significant clamping force which could result in a tension on the bearings, the Artech hubs are designed with an intentional buffer. As a result, when the Artech wheels are not installed in a bike a slight movement is possible on the axle system which can be explained as play. This movement is intentional and will disappear whenever the wheels are installed in the bike and the through axles are tightened according to specification. In case your Artech wheels are new or you are mounting your Artech wheels in a new bike and experience an issue with play, please follow below checks.*

Answer

In case the play did occur after using your Artech wheels for a while we recommend to follow the maintenance procedure of Artech hubs including the replacement of bearings. For the process on how to maintain the Artech hubs and replace the bearings please check [here](#).

1. First, check the through axle. Please untighten the through axle and remove it from the bike. Next, clean the thread and head of the through axle and the dropout of the frame. We recommend applying a small amount of grease to the head and threaded area of the thru-axle. This reduces friction when tightening the axle and improves both clamping force and ease of removal in the future.
2. Insert the through axle back into the bike. Use a torque wrench to tighten the axle until the play is forced out of the system. Never tighten above the frame recommended torque specifications. Furthermore make sure that whenever tighten the through axle the bike or at least the wheel is lifted from the ground (since holding the wheel on the ground can cause the wheel to misalign).
3. Check whether the play on the wheel is gone by holding the rim with two fingers while gently pushing the rim from left to right. To identify play, we recommend to use little force only since this will make it easier to identify any play. In case you still feel play, please go ahead with the next step.
4. In the previous steps we have ensured that the through axle is mounted correctly with the right amount of torque. Since there is still play, the root cause of the play most likely is that the frame and through axle offer limited clamping force. For such

situations we have a special blue engagement spacer and O-ring kit (SC2024144). In the following steps we will explain how to install this kit and thereby solve the play issue.



Figure 3: Artech O-ring kit (SC2024144)

5. In case of play on the front wheel:

- a. Untighten the trough axle and remove the wheel from the fork. Next, remove the disc rotor by untightening the lockring.
- b. Remove the end-cap on the disc side of the hub. This can be done by firmly pulling the end-cap. In case the end-cap is stuck, we recommend to rotate the end-cap slightly while pulling it.
- c. Next, the axle should be removed from the front hub. The axle can be pulled from the non-disc side and will slide out.
- d. Now carefully check the axle and identify the black O-ring which is positioned at the end of the axle, please refer to item number 2 in below exploded view.

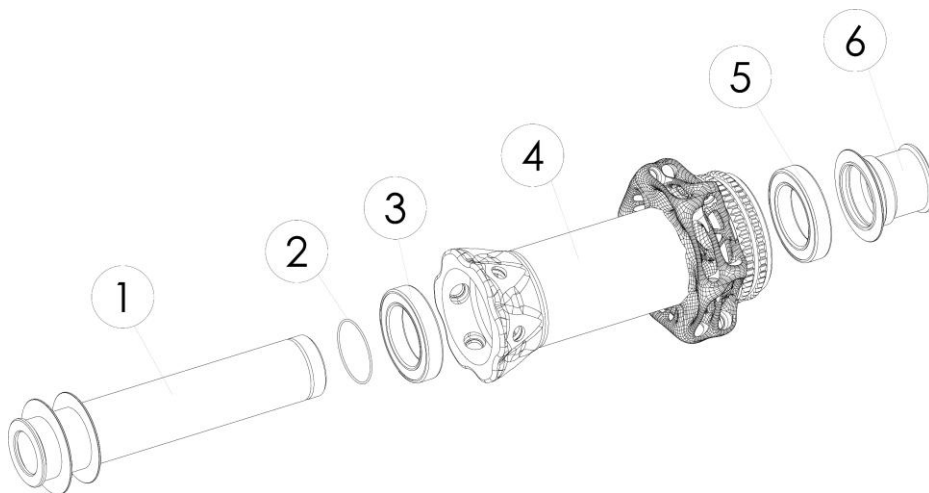


Figure 4: Exploded view Artech front hub

- e. Remove the black O-ring from the axle (you may use a small flat head screw driver to do so).

- f. Next take the blue O-ring from the engagement spacer and O-ring kit and put it onto the axle. Make sure to position the blue O-ring on the indicated position.
- g. Now mount the axle back into the hub, slide the axle into the hub from the non-disc side until the axle is fully seated against the bearing.
- h. Next, mount the end-cap on the disc side by pushing it on the axle while holding the axle in place. A clicking noise will confirm that the end-cap is correctly assembled.
- i. Go to step 2.

In case of play on the rear wheel:

- j. Untighten the trough axle and remove the wheel from the frame. Next remove the disc rotor by untightening the lockring.
- k. Remove the end-cap from the drive side, this can be done by pulling the body (including the cassette if mounted) from the hub. The end-cap will come loose and the body (including the cassette) can be taken off the axle of the hub.
- l. After removing the body, the bronze engagement spacer will become visible. Please remove the bronze engagement spacer from the axle, please refer to item number 3 of the below exploded view.

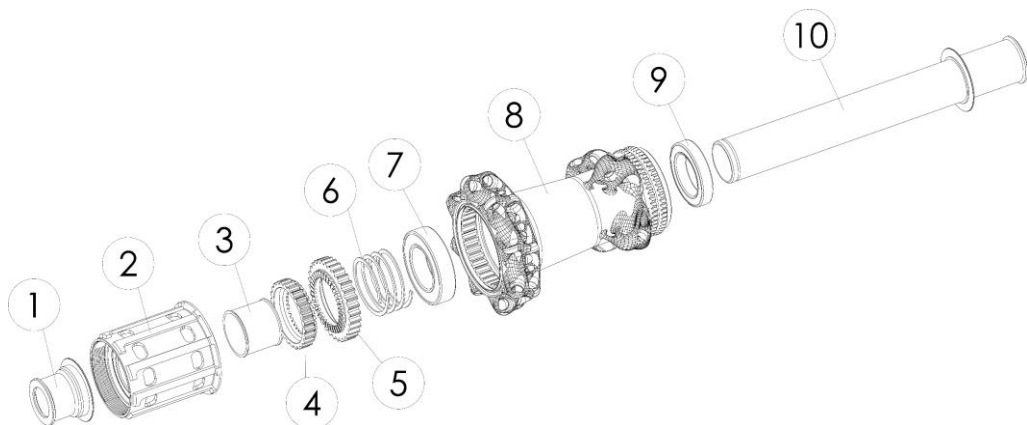


Figure 5: Exploded view Artech rear hub

- m. Take the blue engagement spacer and put it on the axle. Make sure to position the blue engagement spacer on the indicated position.
- n. Put the freehub body onto the axle. You can guide the freehub body on the axle by taking the body and focus on the bearings. The bearings should align with the axle, one could use the index finger to center the body on the axle.
- o. Next, put back the end-cap onto the axle. While doing so, hold the axle from the disc side with your other hand. When pushing on the end-cap a clicking noise indicates that the end-cap is mounted correctly.
- p. Go to step 2.

7. How to replace bearings of my Artech wheels

Question

How should I replace bearings of my Artech hubs? / How should I maintain my Artech hubs?

Answer

In general we recommend to check the hubs of your Artech wheels on a frequent basis by simply checking whether the wheels rotate smoothly in the bike. In case you observe that the wheels do not run smoothly, or in case you identify any noise- or visual issues it is recommended to perform the hub maintenance procedure.

Besides, we recommend to check your hubs with an interval of 5.000 KM or annually. Furthermore, we recommend to change the bearings based on an interval of 10.000KM (this interval is based on normal weather and usage conditions, in the case of usage in rainy conditions the interval should be lowered to 5.000 KM).

The procedure to maintain the hubs and replace the bearings of the Artech hubs is as follows:

7.1. Artech front wheel

Description	Picture
a. Untighten the trough axle and remove the wheel from the fork. Next, remove the disc rotor by untightening the lockring.	
b. Remove the end-cap on the disc side of the hub. This can be done by firmly pulling the end-cap. In case the end-cap is stuck, we recommend to rotate the end-cap slightly while pulling it.	
c. Next, the axle should be removed from the front hub. The axle can be pulled from the non-disc side and will slide out.	

- d. Using a bearing pulley that is compatible with the internal diameter of the bearing of 17mm, pull the drive side bearing from the hub shell.

Once the bearing is removed, it should not be re-used.



- e. Using the same bearing as from the previous step, pull the non-drive side bearing from the hub shell.

Once the bearing is removed, it should not be re-used.



- f. At this stage, we recommend to clean the hub, axle and end-cap with a dry cloth. You may use a degreaser to clean the components.

It's important that all parts are clean before the new bearings are installed.



- g. Take a bearing from bearing kit SC2024141 and place it on top of the bearing seat at the drive side of the hub. Only use little force while placing the bearing on top of the bearing seat, too much force will damage the bearing or hub shell.

Hold the wheel in the same upright position as shown in the picture.



- h. Take the second bearing from bearing kit SC2024141 and place it on top of the bearing seat at the non-drive side of the hub.

Again keep the wheel in the same upright position, otherwise the bearings will potentially fall out.



- i. Take a bearing press tool which is compatible with the 61803 bearings (outer width of 28mm and inner width of 17mm) and press the bearings into the hub shell.

It is important to not apply too much pressure, whenever the bearing is fully seated you will instantly feel that pressing in the bearing further requires more force. Please make sure to stop at this point.



- j. After installing the bearings, it is recommended to apply some grease on the outside of the bearings. Apply about 1 ML on each bearing as shown on the picture.



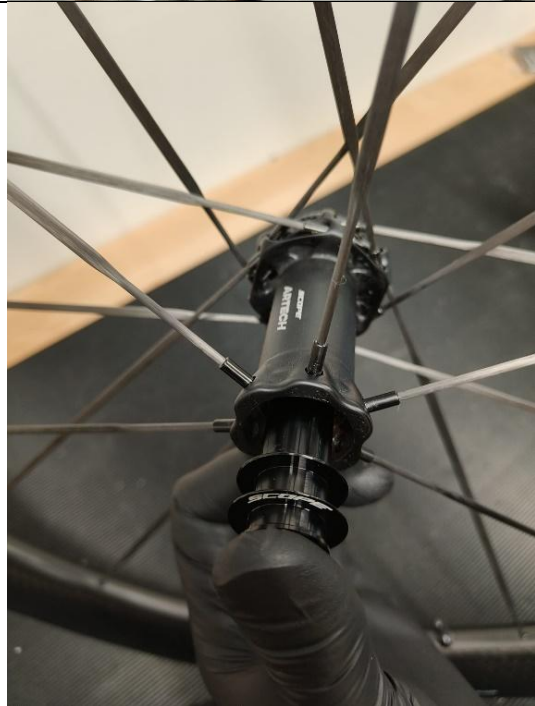
- k. Now take the axle and inspect whether the O-ring is installed and in good condition.

The O-ring should be located on the axle near the integrated end-cap.

In case the O-ring is worn-out or missing, replace it with a new O-ring from engagement spacer and O-ring kit (SC2024144), please follow the detailed instruction as included in this kit.



- l. Next, take the axle with installed O-ring and push it from the Drive Side through the bearings. Push until the axle is fully seated and is aligned with the hub shell.



- m. Next, mount the end-cap on the disc side by pushing it on the axle while holding the axle in place. A clicking noise will confirm that the end-cap is correctly assembled.



- n. Take the disc rotor and mount it onto the centerlock spline of the hub. Next take the lockring and screw it in position by hand and finally lock it with a suitable tool while respecting the torque as stated on the lockring.



- o. Mount the wheel back in the fork according to torque specifications provided by your frame manufacturer.



7.2. Artech rear wheel

Description	Picture
1. Untighten the trough axle and remove the wheel from the frame. Next, remove the disc rotor by untightening the lockring.	
2. Remove the end-cap from the drive side, this can be done by pulling the body (including the cassette if mounted) from the hub. The end-cap will come loose. Now the body (including the cassette) can be removed from the axle.	

3. Next remove the engagement spacer, the spring, and the two ratchets from the axle of the hub.



4. Next, the axle should be removed from the rear hub. The axle can be pulled from the disc side and will slide out.



5. Using a bearing pulley that is compatible with the internal diameter of the bearing of 17mm, pull the drive side bearing from the hub shell.

Discard the removed bearing, it should not be re-used.



6. Using the same bearing pulley as from the previous step, pull the non-drive side bearing from the hub shell.

Discard the removed bearing, it should not be re-used.



7. At this stage, we recommend to clean the hub, axle and end-cap with a dry cloth. You may use a biodegradable degreaser to clean the components.

It is important that all parts are clean and dry before the new bearings are installed.



8. Take a bearing from bearing kit SC2024142 and place it on top of the bearing seat at the drive side of the hub. Only use little force while placing the bearing on top of the bearing seat, too much force will damage the bearing or hub shell.



9. Take the second bearing from bearing kit SC2024142 and place it on top of the bearing seat at the non-drive side of the hub.

Again keep the wheel in the same upright position, otherwise the bearings will potentially fall out.



10. Take a bearing press tool which is compatible with the 61803 bearing (outer width of 26mm and inner width of 17mm) and the 61903 bearing (outer width of 30mm and inner width of 17mm) and press the bearings into the hub shell.

It is important to not apply too much pressure, whenever the bearing is fully seated you will instantly feel that pressing in the bearing further requires more force. Please make sure to stop at this point.



11. After installing the bearings, it is recommended to apply some grease on the outside of the bearings. Apply about 1 ML on each bearing. You can use Scope's regular engagement grease with item number SC2021263 or Scope's Silence grease with item number SC2022350.



12. Next, take the axle with and push it from the disc side through the bearings. Push until the axle is fully seated and is aligned with the hub shell.



13. Now place the spring back onto the axle.



14. Install the engagement spacer on the axle. Please inspect whether the engagement spacer is free from wear and does not have any cracks.

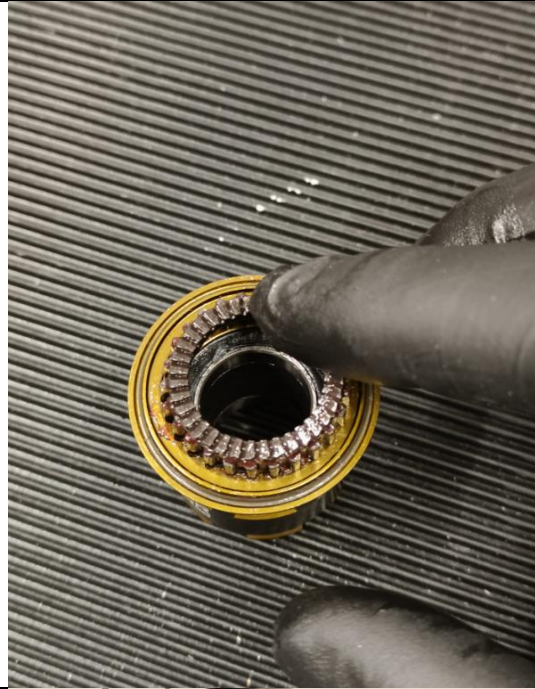
In case the engagement spacer needs to be replaced, please use the kit SC2024144.



15. Next take the large ratchet and mount it with the face teeth pointing into the drive side direction of the hub.



16. Now take the second smaller ratchet and mount it within the spline at the back of the freehub body.



17. Put the freehub body (including cassette and endcap) onto the axle. You can guide the freehub body on the axle by taking the body and focus on the bearings. The bearings should align with the axle, one could use the index finger to center the body on the axle. A clicking noise will confirm that the end-cap is correctly assembled.



18. Take the disc rotor and mount it onto the centerlock spline of the hub. Next take the lockring and screw it in position by hand and finally lock it with a suitable tool while respecting the torque as stated on the lockring.



19. Mount the wheel back in the frame according to our instruction manual.



8. How to true your Artech wheels?

Question

There is a run out in my front or rear wheel, how can I fix this and true the wheels? A spoke in my wheel is twisted / not pointing into the riding direction, how can I solve this.

Answer

Note: *It is possible to true wheels by yourself, but we highly recommend to perform the truing of wheels by a Scope dealer or by the Scope Service center. In case you would like the wheel be serviced by Scope, please submit a service case here: [LINK](#).*

In case you have an Artech wheel, please use the following steps to true the wheel.

1. Remove the wheel from your bike by untighten the through axle.
2. Remove the tire from the wheel including the inner tube if applicable. In case of a tubeless tire, remove the tubeless valve.
3. Remove the tubeless rim tape from the tire bed.
4. Mount the wheel in a truing stand and identify the position of the run-out in the rim.
5. Take the spoke and nipple key from the Artech toolkit. The spoke key (SC2024273) should be inserted via the assembly hole of the rim. The nipple key (SC2024272) should be pushed onto the nipple.
6. Next, the spoke key should be positioned on the steel spline of the carbon spoke. The spoke key features 3 splines that fits within the steel part of the spoke.



Artech nipple key (left) and spoke key (right)

Note: *It is very important to always use the Artech spoke key while trueing an Artech wheel. It is not allowed to use any other spoke key since it will damage the spoke and not hold the spoke in an appropriate way.*

7. Now using the nipple key, the nipple can be tighten (clockwise rotation) or untighten (counterclockwise).
8. We advise to always use a spoke tension meter while trueing the wheel. The advised spoke tension for Artech wheels is 110-130KGF.
9. After finishing the trueing of the wheel, please apply some Loctite to the nipple in order to secure the nipple. We recommend to use Loctite 241 or similar.
10. Now, apply a new layer of rim tape, start taping 10 CM before the valve hole and apply 1 layer of tape and finish it 10 CM after the valve hole. Make a small hole in the rim tape at the valve hole position. In case you use a tubeless valve, you can now assemble it.
11. Put back the tire on the rim and inflate it to the right pressure.

9.Spokes

The tables below indicate the spoke type, length and article codes for your wheelset. In the tables, DS refers to drive side while NDS refers to non-drive side. The spoke tension on the DS should be at 120 kgf for all wheels.

Road			
Type	Description	Article code	Quantity
A2	Carbonlite Aero Spoke - Front DS - 294	SC2024280	6
	Carbonlite Aero Spoke - Front NDS - 305,5	SC2024281	12
	Carbonlite Aero Spoke - Rear DS - 305,5	SC2024282	16
	Carbonlite Aero Spoke - Rear NDS - 302,5	SC2024283	8
	Carbonlite Aerospoke internal nipple black 8.7mm	SC2024274	42
A4	Carbonlite Aero Spoke - Front DS - 271	SC2024284	6
	Carbonlite Aero Spoke - Front NDS - 282	SC2024285	12
	Carbonlite Aero Spoke - Rear DS - 282,5	SC2024286	16
	Carbonlite Aero Spoke - Rear NDS - 279,5	SC2024287	8
	Carbonlite Aerospoke internal nipple black 8.7mm	SC2024274	42
A6	Carbonlite Aero Spoke - Front DS - 252	SC2024288	6
	Carbonlite Aero Spoke - Front NDS - 263	SC2024289	12
	Carbonlite Aero Spoke - Rear DS - 263,5	SC2024290	16
	Carbonlite Aero Spoke - Rear NDS - 260,5	SC2024291	8
	Carbonlite Aerospoke internal nipple black 8.7mm	SC2024274	42

All Road			
Type	Description	Article code	Quantity
A2.A	Carbonlite Aero Spoke - Front DS - 294	SC2024280	6
	Carbonlite Aero Spoke - Front NDS - 305,5	SC2024281	12
	Carbonlite Aero Spoke - Rear DS - 305,5	SC2024282	16
	Carbonlite Aero Spoke - Rear NDS - 302,5	SC2024283	8
	Carbonlite Aerospoke internal nipple black 8.7mm	SC2024274	42
A4.A	Carbonlite Aero Spoke - Front DS - 271	SC2024284	6
	Carbonlite Aero Spoke - Front NDS - 282	SC2024285	12
	Carbonlite Aero Spoke - Rear DS - 282,5	SC2024286	16
	Carbonlite Aero Spoke - Rear NDS - 279,5	SC2024287	8
	Carbonlite Aerospoke internal nipple black 8.7mm	SC2024274	42
A6.A	Carbonlite Aero Spoke - Front DS - 252	SC2024288	6
	Carbonlite Aero Spoke - Front NDS - 263	SC2024289	12
	Carbonlite Aero Spoke - Rear DS - 263,5	SC2024290	16
	Carbonlite Aero Spoke - Rear NDS - 260,5	SC2024291	8
	Carbonlite Aerospoke internal nipple black 8.7mm	SC2024274	42

Gravel			
Type	Description	Article code	Quantity
A4.G	Carbonlite Aero Spoke - Front DS - 271	SC2024292	6
	Carbonlite Aero Spoke - Front NDS - 282	SC2024293	12
	Carbonlite Aero Spoke - Rear DS - 282,5	SC2024294	16
	Carbonlite Aero Spoke - Rear NDS - 279,5	SC2024295	8
	Carbonlite Aerospoke internal nipple black 8.7mm	SC2024274	42

Triathlon / Time Trial			
Type	Description	Article code	Quantity
A8	Carbonlite Aero Spoke - Front DS - 232	SC2024296	6
	Carbonlite Aero Spoke - Front NDS - 243	SC2024297	12
	Carbonlite Aero Spoke - Rear DS - 243,5	SC2024298	16
	Carbonlite Aero Spoke - Rear NDS - 240,5	SC2024299	8
	Carbonlite Aerospoke internal nipple black 8.7mm	SC2024274	42

10. Other questions

In case the above explanation hasn't been sufficient answer your questions, please reach out by phone +31 (0)40 298 66 04 or mail info@scopecycling.com to get in touch with our customer service team.