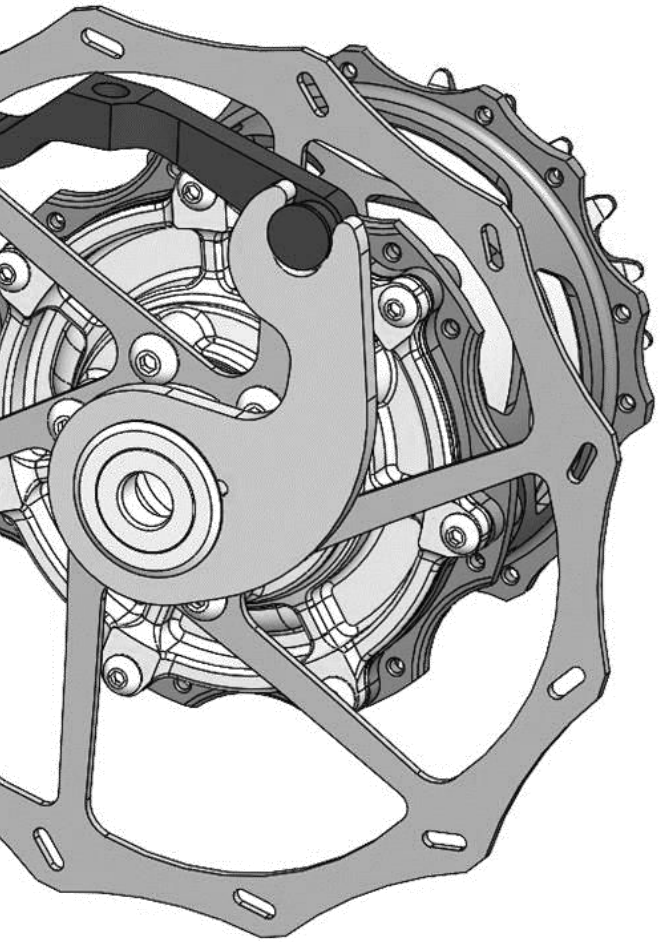


KINDERNAY VII

INSTALLATION MANUAL

Ver 1.0.6

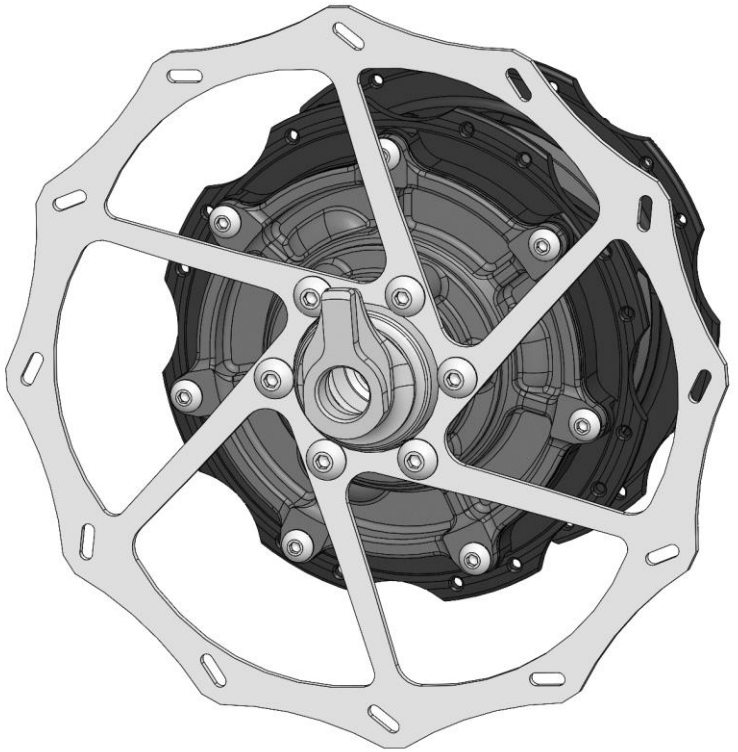
DISCLAIMER

- The gearhub must not be used outside its intended use case or installed in a different way than decribed in this manual.
  - Improper installation can cause serious bike malfunction that may lead to serious injury or death!
- The installation procedure should only be performed by experienced mechanics.
- The gearhub must never be used without a SWAP shell.
  - This can cause the hub shell to separate and will void the warranty.
- The minimum sprocket ratio of the VII is 1.6. The minimum front chainring is 32T on E-bike and 30T on a non-assisted bike.
  - Using a lower sprocket ratio or chainring size will void the hub warranty.
- The maximum crank torque is 160 Nm and the maximum motor power is 1000 W.
  - Using a bike/mid-drive motor with more than 160 Nm / 1000 W will void the hub warranty.
- The max. sprocket thickness is 2.3 mm.
  - Using a thicker sprocket or a non-original lockring will void the warranty.
- Wear eye protection and rubber gloves.
- USE ONLY MINERAL OIL WHEN BLEEDING THE SYSTEM.
  - DOT fluid will destroy the seals inside the shifters.
- Remove or protect any brake components before performing the bleeding procedure. Any oil spill on braking components may affect braking performance afterwards that can lead to serious injury or death.

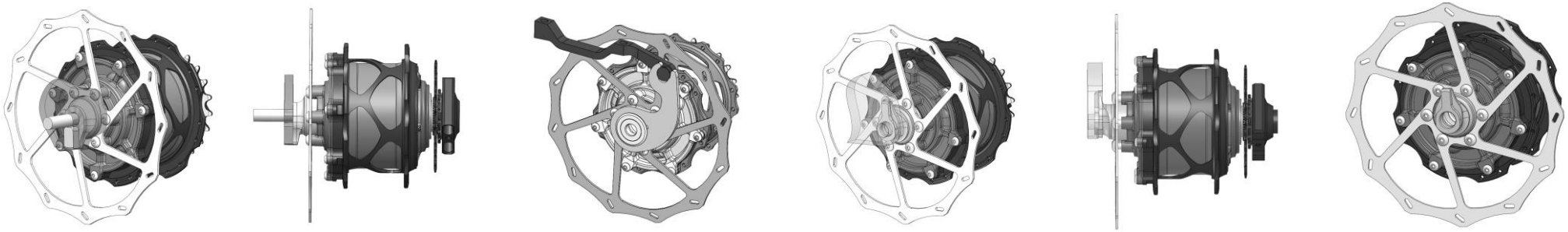
SCOPE

This instruction is intended for professional and home mechanics to:

- Install the Kindernay gearhub system on a bicycle
- Find product specifications for the Kindernay VII gearhub



CONTENTS



IN THE BOX

This is a list of the contents included with the Kindernay VII gearhub:

- VII hub with drive sprocket
  - The hub is pre-filled with 20 ml of oil
- SWAP shell (28h, 32h or 36h)
- HYSEQ hydraulic shifter unit
- For universal torque arm (UTA) hubs
  - PM Torque reaction mount
  - M6 Mounting bolts for torque reaction mount with conical washers (2pcs)
  - M4 Mounting bolts for SWAP shell (7pcs)
- For 148 mm BOOST hubs
  - 148 mm BOOST 3 mm adapter including bolts (WARNING: Do not use the included bolts without the adapter!)
- Spare bolts for SWAP shell (3pcs) and spare olives (2pcs) for the hydraulic lines

SERVICE INTERVALS

NOTE !
Failure to follow the Kindernay VII service procedures will void the Kindernay gearhub warranty.

We specify the following oil change intervals for the Kindernay VII:

- Initial oil change: After first 500 km
- Periodic oil change: Next 5000 km or annually, whichever comes first

Please see page 19 for the oil change procedure.

TOOLS NEEDED

This is a list of tools that we recommend to set up the Kindernay VII internal gear hub on your bike:

- 2.5 and 5 mm Allen key
- T20 and T25 Torx driver
- 5-, 8- and 10-mm wrench
- Torque wrench
- Chain cutter and chain link tool
- 38 mm chamferless socket, or 16-notch 44 mm BB tool (depending on lockring)
- Flathead screwdriver

SWAP INSTALLATION

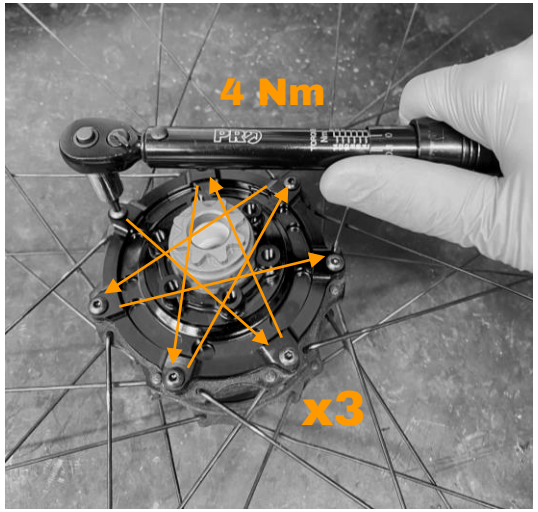
CAUTION !
Failure to install the bolts according to the described procedure below can cause the bolts loosening, leading to serious malfunction and injury.

NOTE !
The Kindernay XIV SWAP bolts are incompatible and must not be used with the VII, or vice versa.

1.1: Clean the SWAP-shell and gearhub housing.

1.2: Apply Loctite 243 to the supplied M4 12 mm bolts

1.3: Install the gearhub in the SWAP, align the bolt holes and install the bolts.



1.4: Tighten the bolts to 4 Nm in a star pattern. Repeat 3 times.

BRAKE ROTOR INSTALLATION

CAUTION !

A 6-bolt brake rotor with a minimum thickness of 1.8 mm and internal diameter of 34 mm must be used. Rotors with smaller ID may cause cosmetic damage to the hub.

CAUTION !

Always use the included brake rotor bolts when installing the brake rotor. Using other rotor bolts can cause damage to the hub.

NOTE !

On PM180 and PM200/203 frames, low profile rotor magnets such as the Bosch 1270015728 can be used. On PM160 frames, a rotor with a built in magnet must be used, otherwise the PM-adapter will collide.

VII 135 / 142 mm

2.1a: Install the brake rotor according to manufacturer specifications.

2.2a: Tighten the bolts to 6 Nm in a star pattern.

VII 148 mm

2.1b: Align the 3 mm boost adapter.

2.2b: Install the rotor bolts with the supplied bolts as shown.

2.3b: Tighten the bolts to 6 Nm in a star pattern.

TORQUE ARM INSTALLATION / REMOVAL

NOTE !

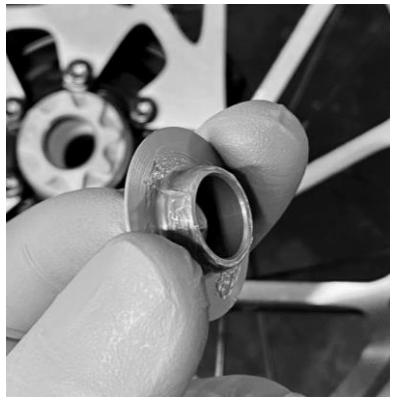
The VII 148 mm universal torque arm has a slight bend that must point outwards during installation

NOTE !

The VII universal torque arm will have slight rotational play after installation, this is normal.

INSTALLATION

3.1: Install the torque arm.



3.2: Lightly grease the end cap press fit surface.

3.3: Gently tap the match cap in place with a rubber mallet.

REMOVAL

3.4: Gently tap the end of the torque arm with a rubber mallet.

3.5: Remove the torque arm and match cap.

GEAR RATIO SPECIFICATION

Gear no.	Gear ratio
1	0,484
2	0,616
3	0,785
4	1,000
5	1,274
6	1,623
7	2,068

- The VII has 428% range and even 28% gear steps
- Because of the larger gear steps, it is especially important to specify a suitable sprocket/chainring combination for the intended use case
- For most e-bikes we recommend optimizing the gear ratio to have a comfortable cadence in 6th gear (1.62) at 25km/h
- Gates Carbon Drive Calculator: Link

NOTE!

The minimum sprocket ratio of the VII is 1.6. The minimum front chainring is 32T on E-bike and 30T on a non-assisted bike. Using a lower sprocket ratio or front chainring will void the hub warranty.

The sprocket ratio is determined as follows:

$$r_{sprocket} = \frac{Front\ chainring\ tooth\ count}{Hub\ sprocket\ tooth\ count}$$

CHAIN SPROCKET INSTALLATION

NOTE !

The VII is compatible with 9, 10 or 11 speed chains. Wider chains may contact the HYSEQ actuator and cause damage.

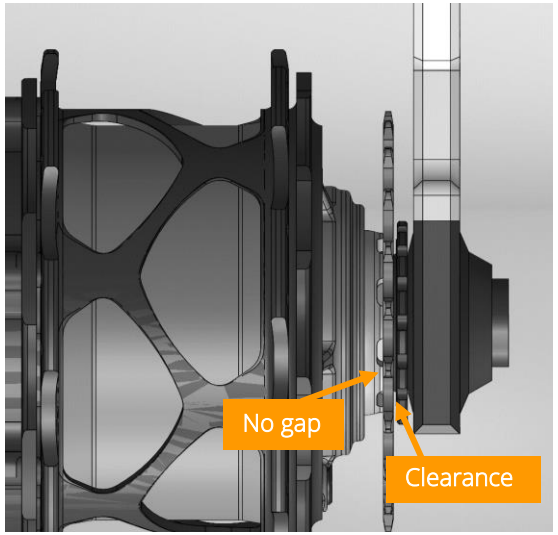
NOTE !

The maximum thickness of the hub sprocket is 2.3 mm.

4.1: Install sprocket.

4.2: Install the hub sprocket lockring by rotating clockwise.

4.3: Torque the lockring to 30 Nm.



4.4: Verify that the HYSEQ actuator has clearance to the lockring and that there is not gap to the input shaft. The sprocket should rotate freely when the actuator is installed.

BELT SPROCKET INSTALLATION

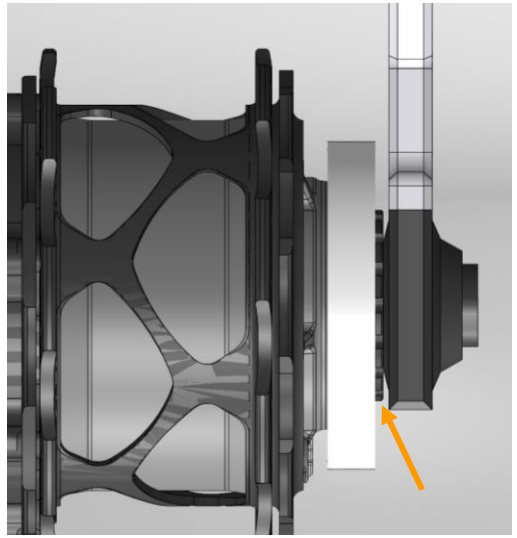
NOTE !

The Kindernay VII is compatible with offset Gates HG HMN sprockets, such as the CT1122HMN. The belt line is 45.5 mm.

5.1: Install sprocket.

5.2: Install the hub sprocket lockring by rotating clockwise.

5.3: Torque the lockring to 30 Nm.

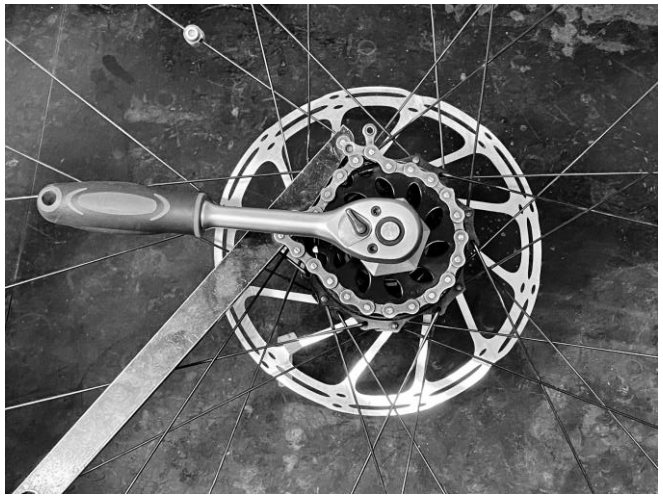


5.4: Verify that the HYSEQ actuator has clearance to the lockring. The sprocket should rotate freely when the actuator is installed.

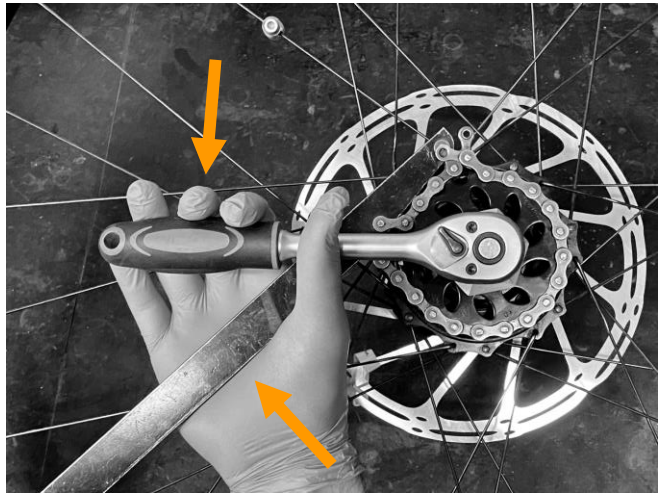
SPROCKET REMOVAL

NOTE !

If attempting to remove a Gates belt sprocket, a Gates Strap Wrench is recommended (https://www.gatescarbondrive.com/products/tools).



6.1: Align the chain whip / belt strap wrench and lockring tool as shown.



6.2: Loosen the lockring.

6.3: Remove the lockring by rotating counterclockwise.

PM TORQUE RETAINER INSTALLATION

CAUTION !

The PM torque retainer will offset the caliper unevenly compared to the bolt head, so the included conical washers must be used!

NOTE !

The universal torque retainer will add 20 mm to the original frame rotor size.

7.1: Apply Loctite 243 to bolts.

7.2: Install the torque retainer with bolts and conical washers as shown.

7.3: Install the hub and align the brake caliper.

7.4: Torque the PM bolts to 9 Nm.

HYSEQ INSTALLATION

NOTE !

For hose cutting and bleeding procedures, please see the manual on https://kindernay.com/support/support-portal/.

8.1 – First mounting point

When mounting the hose to the frame in the first point after the actuator, make sure there is enough cable length between the point and the actuator, so the wheel can be pulled out of the frame. Use a rubber band and zip tie to secure the fastening point.

8.2 – Second mounting point

The next mounting point must be placed so that the cable can be routed in an orderly fashion when the rear frame of the bike moves through the path of travel. This point is normally located on the front triangle.
To ensure proper cable routing we recommend that the rear shock either is completely removed from the bike, or dismounted in one eyelet. This will make it easier to see what effect the movement of the rear frame will have on the cable.
If there is no natural fastening point use a rubber band and zip-tie.
An easy way to ensure that the cable moves correctly is adding slack to the cable in the direction you want it to fold. See picture. Mount the rear shock again after the first mounting point on the front triangle has been fastened.

8.3 – To the handlebars

When mounting towards the handlebars we recommend using fastening points that are original to the frame. If this is not possible, use the included rubber bands and zip-ties. Mount the HYSEQ levers to the handlebar in the preferred position.

8.4 – After assembly check list

- Can the wheel be dismounted from the frame?
- Does the cable move freely in the correct direction under the travel ratio?
- The cable does not interfere with any other function of the bike?

HUB / WHEEL INSTALLATION

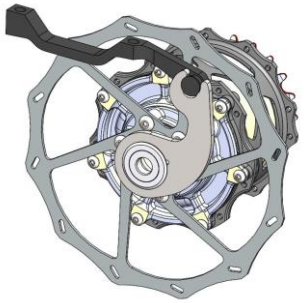
9.1: Install the chain/belt on the gearhub sprocket.

9.2: Install the actuator by pressing it on the drive side of the hub.

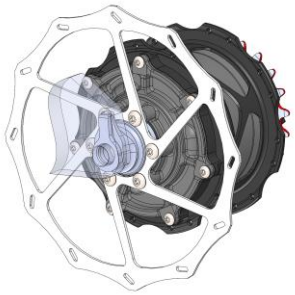
9.3: Align the torque arm and insert the wheel into frame.

9.4: Install, but do not tighten the thru-axle. Position the actuator in the desired position.

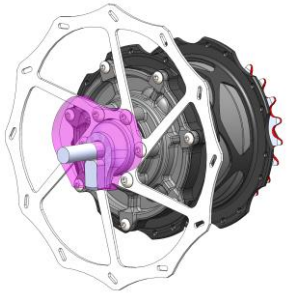
9.5: Tighten the thru-axle according to frame manufacturer specifications.



Universal: Align the fork with the PM retainer.



12x142/148 Integrated: Align the torque arm with the frame dropout, pointing upwards.



10x135 mm Integrated: Align the torque arm with the frame dropout, pointing downwards.

9.6: Verify that the torque arm is installed in the retainer, according to the hub specification.

CAUTION !

Failure to align the torque arm during hub installation will cause malufunction and damage to the bike frame and components.

CHAIN TENSIONER INSTALLATION

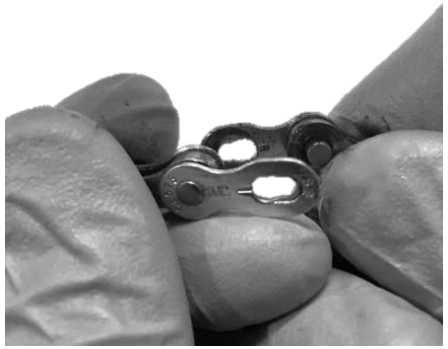
NOTE !

Unless you are installing the gearhub on a bicycle with sliding dropouts or eccentric BB, you will need to install a chain tensioner.

10.1: Mount the chain tensioner to the bike's original drop-out.

10.2: For full suspension bikes: Unbolt or let the air out of the shock. Zip-tie the rear triangle in the maximum travel position.

10.3: Wrap the chain around the front and rear sprocket. Add additional chain links according to you bike type.



10.4: Cut, route and connect the chain.

OIL CHANGE PROCEDURE

CAUTION !

Make sure to remove all braking components before attempting the oil change procedure. Over-filling the gearhub will cause leakage that can damage braking components.

NOTE !

Do not dispose the used gearhub oil in the drain or in nature. Please collect the used gearhub oil and deliver it to your nearest recycling center.

11.1: Remove the torque arm, brake rotor, and sprocket.

11.2: Unscrew the oil screw on the driveside of the hub.

11.3: Position the wheel against the wall at a 45° angle, with the oil plug facing downwards. Let the oil drain for 1-2 hours or more in room temperature.

11.4: Turn the wheel around with the oil plug facing upwards.

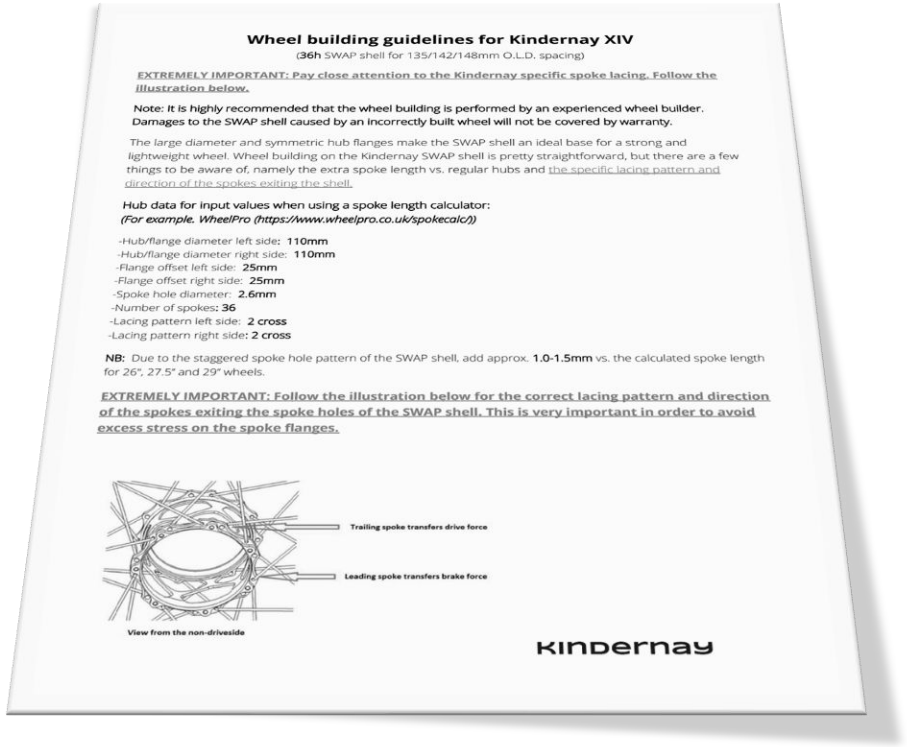
11.5: Refill the gearhub with 20 ml of Kindernay Velvet Fluid.

Reinstall the oil plug, tighten to 3 Nm.

WHEEL BUILDING MANUAL

- For updated wheel building manuals relevant for your SWAP specification, please see our website:

  https://kindernay.com/support/support-portal/



Wheel building guidelines for Kindernay XIV

(36h SWAP shell for 135/142/148mm O.L.D. spacing)

EXTREMELY IMPORTANT: Pay close attention to the Kindernay specific spoke lacing. Follow the illustration below.

Note: *It is highly recommended that the wheel building is performed by an experienced wheel builder. Damages to the SWAP shell caused by an incorrectly built wheel will not be covered by warranty.*

The large diameter and symmetric hub flanges make the SWAP shell an ideal base for a strong and lightweight wheel. Wheel building on the Kindernay SWAP shell is pretty straightforward, but there are a few things to be aware of, namely the extra spoke length vs. regular hubs and the specific lacing pattern and direction of the spokes exiting the shell.

Hub data for input values when using a spoke length calculator:
(For example, WheelPro (https://www.wheelpro.co.uk/spokecalc/))

-Hub/flange diameter left side: **110mm**
-Hub/flange diameter right side: **110mm**
-Flange offset left side: **25mm**
-Flange offset right side: **25mm**
-Spoke hole diameter: **2.6mm**
-Number of spokes: **36**
-Lacing pattern left side: **2 cross**
-Lacing pattern right side: **2 cross**

NB: *Due to the staggered spoke hole pattern of the SWAP shell, add approx.* **1.0-1.5mm** *vs. the calculated spoke length for 26", 27.5" and 29" wheels.*

EXTREMELY IMPORTANT: Follow the illustration below for the correct lacing pattern and direction of the spokes exiting the spoke holes of the SWAP shell. This is very important in order to avoid excess stress on the spoke flanges.

KINDERNAY

Need support?

Contact our support team directly at

support@kindernay.com