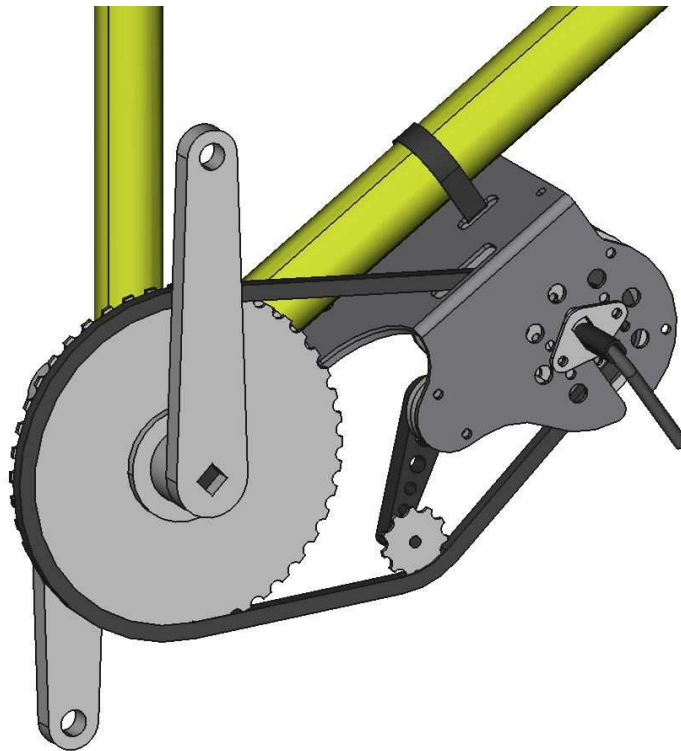


MDK (MID DRIVE KIT) Assembly and User Guide

V2.0



Do not waste paper

Only print the essential pages of this document.

- Print on both sides
- Print several pages on the same sheet of paper

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1 Presentation

The MDK has been prepared with the utmost care in our workshop to guarantee a quick and simple installation. **It has been fully tested with all accessories, before shipment,** it works perfectly.

There are no electrical modifications or weldings to do.

The different steps of the installation are described precisely in **Chapter 4**. If you would like to have more information, you can contact our technical department by email at this address: support@cycloboost.com.

On this link you will find a video for the installation of the steel rack:

<http://www.kit-moteur-pedalier.com/installation/>

2 Support

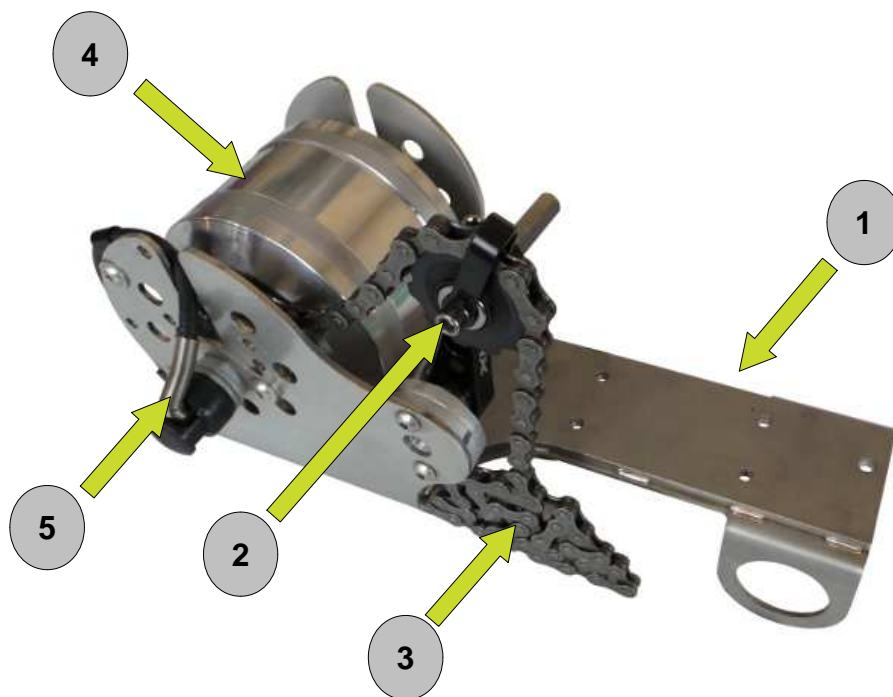
If you have any questions during the installation, you can contact us directly from your customer space (After Sales Service) on our website or contact us by email support@cycloboost.com stating:

- Your name
- Your invoice number
- Your phone number in case we need to call you
- A precise description of the failure
- Photos, if necessary, so we can better understand your request

3 Content of the kit

3.1 The motor rack

The rack (1) is delivered already assembled, you have nothing to do. The chain adjuster (2) , the chain (3), the motor (4) and the cables (5) are already in place.



We provide a self-adhesive protection foam: it is placed between the bicycle frame and the clamp of the rack to prevent damages to the bicycle frame due to the vibration during use. There is already a protection foam on the rack itself to avoid damaging the paint of the bike frame.



3.2 The controller in the bag

The **controller** is already set up in a bag (handlebar or saddle). When all accessories are set up on your bike, you will just have to connect them directly to the controller inside the bag.



Saddle bag

Handlebar bag



3.3 The chainset and the crank



Chainset with 3 chainwheels 44/44/32 teeth with its crank



Square crank axle to set up on the opposite side of the chainset (68mm chainset shell for hybrid bikes and semi-suspended MTB)



Crank axis ISIS to set up on the opposite side of the chainset
(73mm chainset shell for full-suspended MTB)



SQUARE chainset shell **axe**
(68mm chainset shell for hybrid bikes and semi-suspended MTB)



Chainset shell **ISIS** **axe**
(73mm chainset shell for full-suspended MTB).

3.4 Driving accessories

3.4.1 Thumb (by default) or twist throttle

It allows you to adjust the **rotation speed** of the motor.

The inner cruise control function: if you maintain the **throttle** in the **same position** for **more than 8s**, the controller **blocks the rotation speed of the motor** in this position: you have activated the cruise control. To disable this feature, simply release the throttle (if not done voluntarily yet) and speed up again once.



**Thumb throttle
with warning light**



**Thumb throttle
WITHOUT warning light
(more compact)**



**Twist throttle
With warning light**

Depending on the models, this accessory is supplied with a **warning light** for the battery with 3 colours which will switch off according to the level of charge of the battery :

- **GREEN** - batterie charged
- **ORANGE** - batterie half charged
- **RED** - batterie almost empty

This accessory is also equipped with a **red button** for the light control (option).

3.4.2 Optional: cruise control

This accessory allows to **activate the cruise control instantaneously**. You speed up and when your speed is stabilized, you press the cruise control (**red button**) once. You can then release the throttle, the cruise control is activated. To disable it, simply press the button again or speed up again once.



Note: the **green button** is not used with this controller.

3.4.3 Optional: power cut brakes

This accessory allows to cut the power supply as soon as you press at least one of the levers. It also allows to disable the cruise control.

As soon as you release the levers, you can speed up again.



3.4.4 Optional: Pedelec (pedalling sensor)

This accessory allows to trigger the electric assistance when you pedal. It triggers from a pedal rate of about 60 tours per second. This pedalling sensor does not trigger depending on the pressure on the pedals but only depending on the rotation of the pedals.

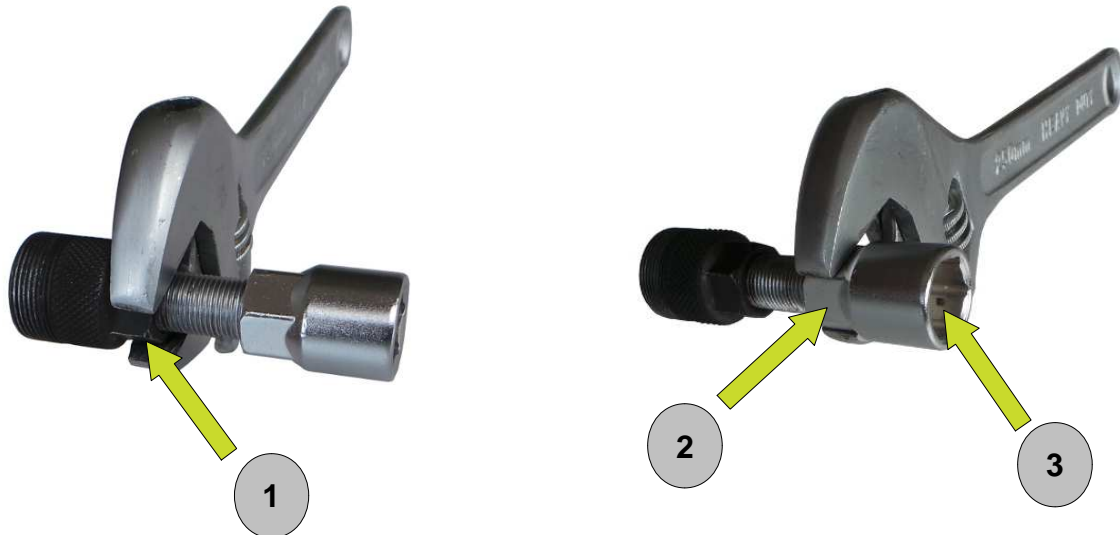


3.5 Installation tools

We deliver specific tools to install the chainset shell: a tool to **disassemble the crank** and another to **disassemble the chainset shell**. The other tools necessary to disassemble are standard: adjustable spanner, 15mm spanner, cross-shaped screwdriver, wire cutter and a set of Allen keys.

3.5.1 Tool to disassemble the crank

It is composed of 2 moving parts: the first part (1) will be screwed into the crank, it will serve as a fix base. The second part (2) will put weight to the axe of the chainset and push the crank out of its slot.



The tool to disassemble the crank also includes a useful 14mm spanner to remove the screw cranks (3).

3.5.2 Tool to disassemble the chainset shell

3.5.2.1 Tool to disassemble the chainset shell Shimano BB



This tool is delivered as standard with 68mm racks for chainset shells for hybrid bikes and semi-suspended MTB.

3.5.2.2 Tool to disassemble the chainset shell Shimano Octalink



This tool is delivered as standard with 73mm chainset shells for full-suspended MTB.

3.5.2.3 *Mecanics reminder*

3.5.2.3.1 **Screwing of the chainset shell**

You have to respect this rotation way for **Disassembling**:

- **Cup – pedal side** : you have to **Screw** to **Unscrew**
- **Cup opposite side** : you have to **Dévisser** to **Dévisser**

You have to respect this rotation way for **Assembling**:

- **Cup – pedal side** : you have to **Unscrew** to **Screw**
- **Cup opposite side** : you have to **Screw** to **Screw**

3.5.2.3.2 **Screwing of the pedals**

You have to respect this rotation way for **Disassembling**:

- **Pedal – pedal side** : you have to **Unscrew** to **Unscrew**
- **Pedal opposite side** : you have to **Visser** to **Unscrew**

You have to respect this rotation way for **Assembling**:

- **Pedal – pedal side** : you have to **Screw** to **Screw**
- **Pedal opposite side** : you have to **Unscrew** to **Screw**

4 Installation steps

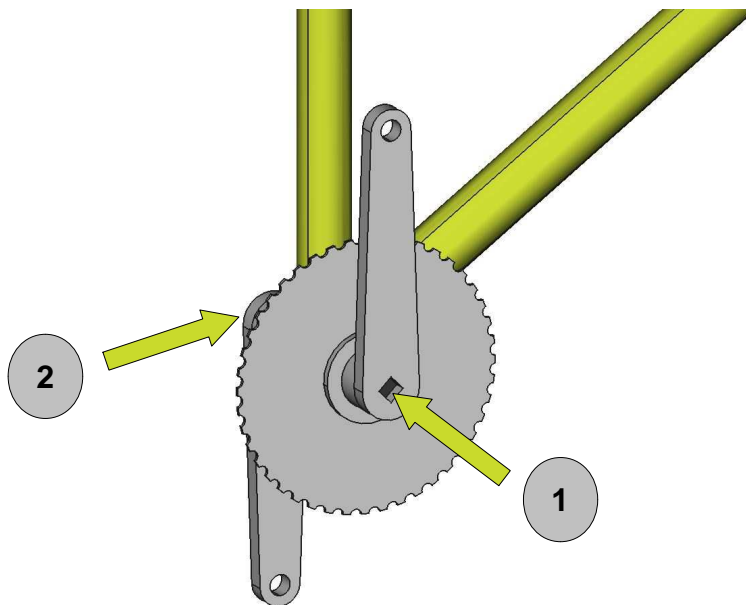
Before starting the installation, we recommend that you position the **chain on the smallest chainring** and **the largest sprocket at rear**. It will be easier to insert the new chainring with the 2 chains.

Tip: you can turn your bike upside down and place it on a table to be at the right height to work, as you can see in the video.

Finally, have your tools at hand to be able to install the kit:

- a set of Allen keys
- an adjustable spanner
- the delivered tool to disassemble the crank
- the delivered tool to disassemble the chainset shell
- a screwdriver
- a wire cutter

4.1 Disassembling of the chainset shell and the crank



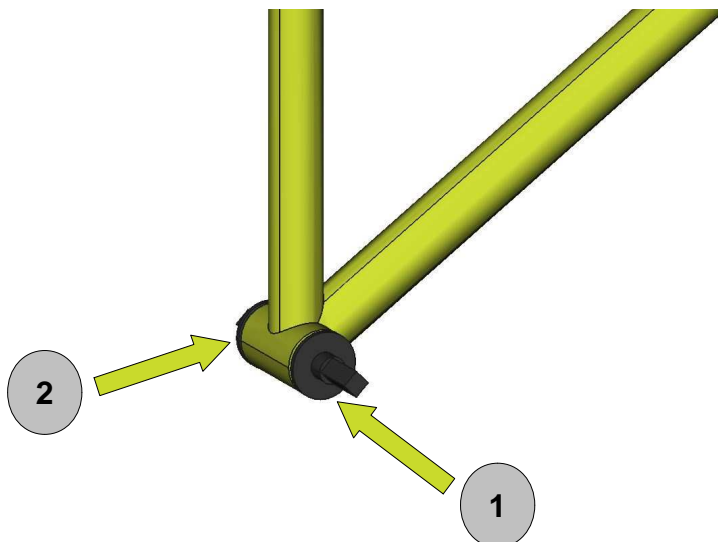
drawing 1

The chainset and the cranks are screwed on the chainset shell. You have to begin by unscrewing the screw cranks (see drawing 1 step 1) using the 14mm spanner integrated in the tool to disassemble the crank or an Allen key n°8, depending on the brand of the bike equipment.

Then screw the tool to disassemble the crank onto the crank. Then use an adjustable spanner to screw the second part of the tool to disassemble the crank (see §3.5.1): will put weight to the axe of the chainset and push the crank out of its slot.

Do the same with the other crank (see drawing 1 step 2).

4.2 Disassembling of the chainset shell



drawing 2

Insert the tool to disassemble the chainset shell in the cup of the chainset shell.

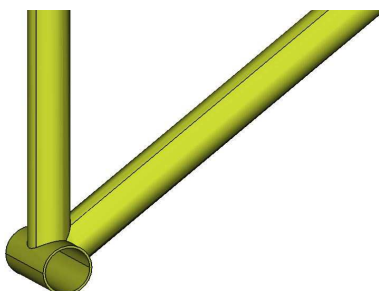
Reminder:

- **Cup pedal side** (see drawing 1 step 1): you have to **Screw** to **Unscrew**
- **Cup opposite side** (see drawing 1 step 2): you have to **Unscrew** to **Unscrew**

Depending on the bike model, **this step may demand a lot of strength**, because the cups have been screwed with great force. We recommend to use an adjustable spanner with a big lever to facilitate the disassembling.

You have to unscrew the cups of the chainset shell on both sides (see drawing 1 step 1 and 2).

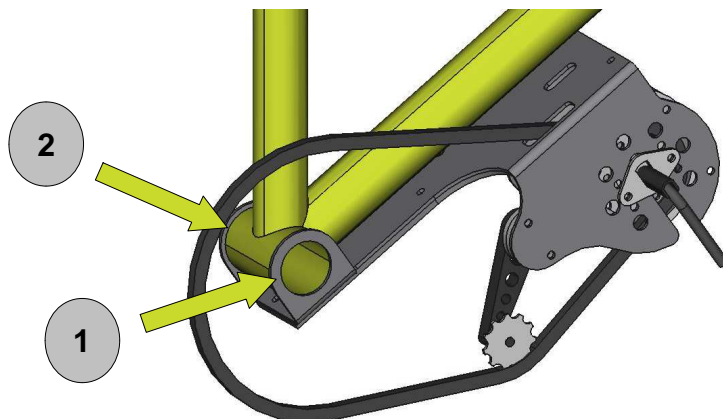
If everything went well, you should be at this step (see drawing 3). The hardest part is done.



drawing 3

4.3 Installation of the rack

Put the rack in place on the bike frame (see drawing 4). Everything must be aligned to install the chainset shell without any difficulty.



drawing 4

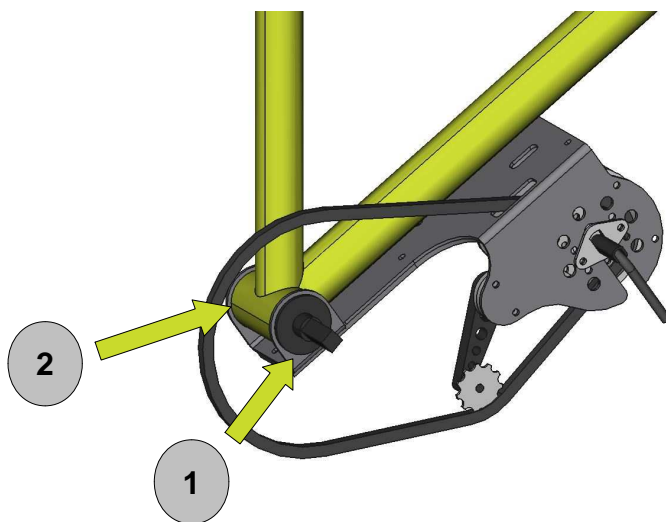
Depending on the thickness of the painting of the bike frames, the width of the chainset shell can vary from 1 to 2 mm.

If the rack is inserted with force, you have to **remove the paint of your frame** by using a metal file (see drawing 4 step 1 & 2) for an easy insertion, without any force.

Tip: for an easy installation, you can put the bike upside down as in the video.

4.4 Assembly of the new chainset shell

Insert the chainset shell, the part with the **cup fixed on the pedal side** and start to screw the cup on the pedal side (see drawing 5 step 1) **without blocking it** :



drawing 5

Then screw **without blocking it** the cup on the **opposite side**.

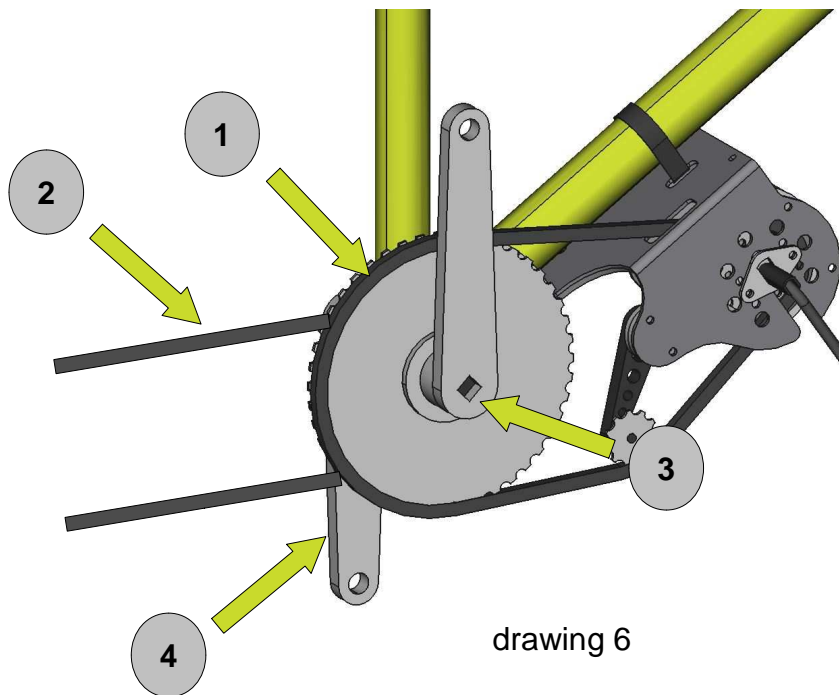
Note: having screwed the cup on the pedal side only a little and first, facilitates the

insertion and screwing of the cup on the opposite side.

The **way of screwing** of the cups of the chainset shell are indicated in §3.5.2.3.1.

Important: the 2 cups are at this step **partly screwed**, finish screwing the **cup on the pedal side firmly first** (see drawing 5 step 1) and then the cup on the opposite side (see drawing 5 step 2).

4.5 Assembly of the new chainset and cranks



Introduce the pedal at the axe of the chainset shell:

- **Step 1:** wind the MDK chain on the **big chainring** (see drawing 6 step 1)
- **Step 2:** wind the bike chain on the **small chainring** (see drawing 6 step 2)

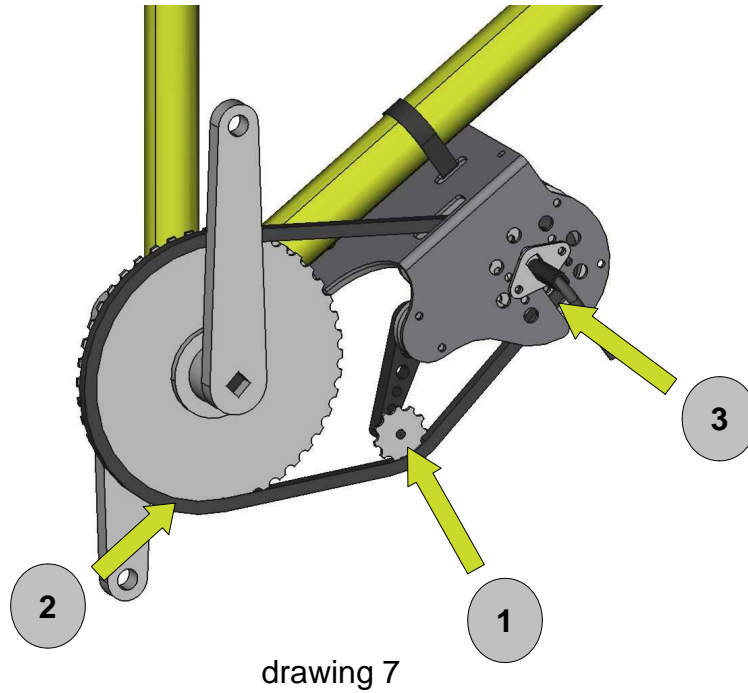
Slide the chainset in the axe of the chainset shell (see drawing 6 step 3), now you only have to tighten the blockade screw of the crank by using the tool to disassemble the crank or an Allen key n8.

Then position the crank of the opposite side on the axe opposite to the chainset and tighten the blockade screw of the crank (see drawing 6 step 4).

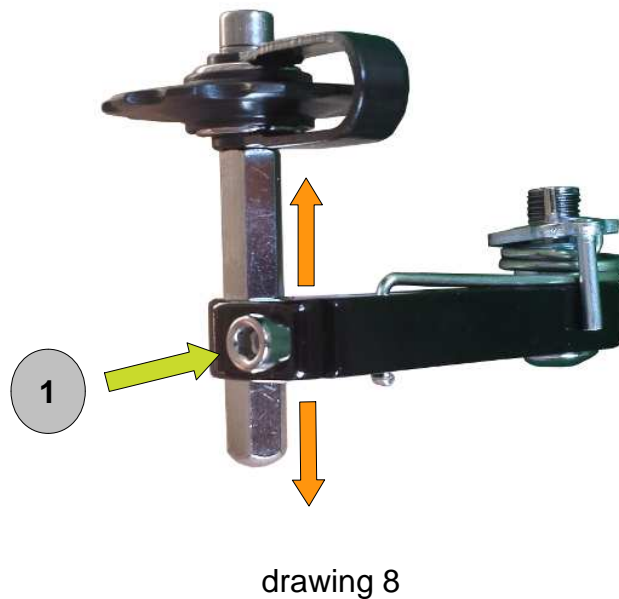
Note: pay attention to the position of the crank. They should be reversed as in drawing 6.

4.6 Verification of the alignment of the tension pulley / chain adjuster

To reduce friction of the transmission, the **tension pulley** (drawing 7 step 1) has to be aligned with the chain chainset/motor cog (drawing 7 step 2 and 3).



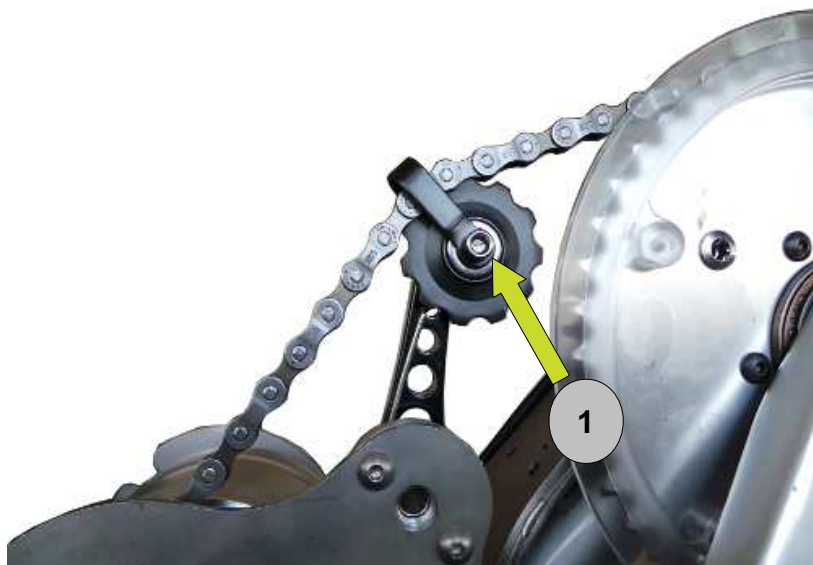
You can adjust the alignment of the tension pulley by using the screw of the tension pulley (see drawing 8 step 1):



The anti-derailment clamp has to be positioned perpendicular to the chain to avoid

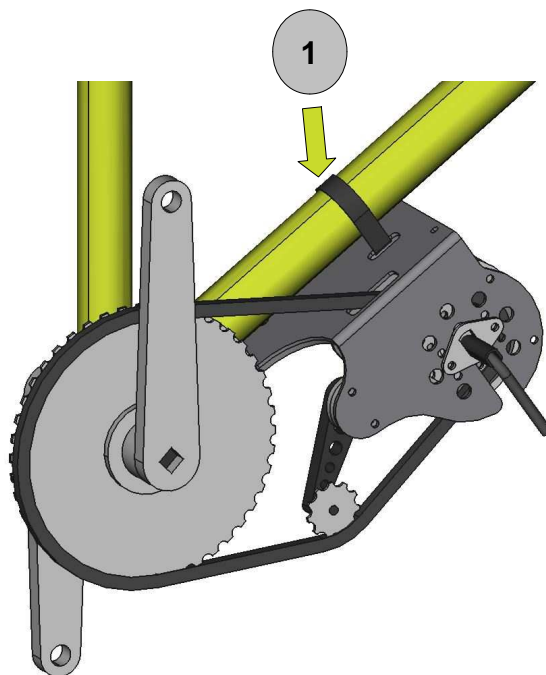
hindering its passage.

You can adjust the clamp by using this screw (see drawing 9 step 1).



drawing 9

4.7 Fixing the clamp



Drawing 10

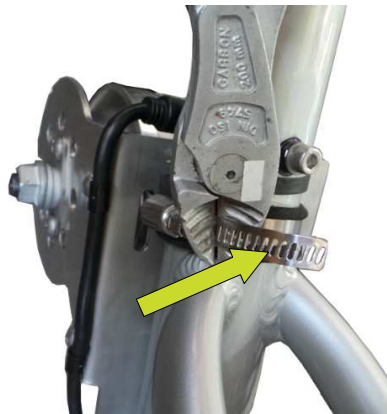
Stick the protection foam in the space where the clamp will be set on the frame (see drawing 10 step 1).

Close and screw the clamp above the protection foam (drawing 11).



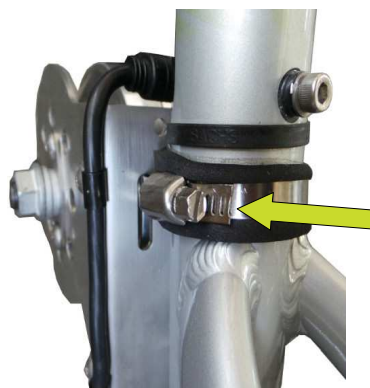
Drawing 11

Cut the excess of the clamp with pliers (drawing 12).



Drawing 12

The final result is in drawing 13.



Drawing 13

When you cut the excess, **make sure this one is not too sharp**. You can use tape in order to make it safe or properly bend it against the clamp with pliers (drawing 13).

4.8 Setting up the pedals

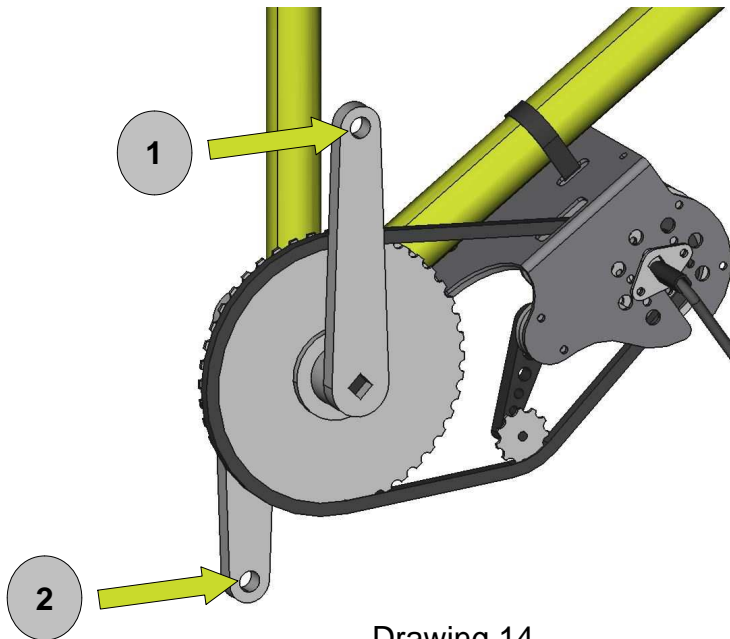
You can use the original pedals and put them on the new cranks. For this you need a spanner of 15mm.

Here are the rotation directions to respect when you **disassemble**:

- **Pedal on the side of the chainset** : you need to **Unscrew** in order to **Screw back**
- **Pedal on the other side** : you need to **Screw** in order to **Screw back**

Here are the rotation directions to respect when you **assemble**:

- **Pedal on the side of the chainset** : you need to **Screw** in order to **Screw back**
- **Pedal on the other side** : you need to **Unscrew** in order to **Screw back**



Drawing 14

Screw the pedal on the side of the chainset in its place (see drawing 14 step 1) and respect the rotation direction described above.

Make the same procedure on the pedal on the other side (see drawing 14 step 2).

Important:

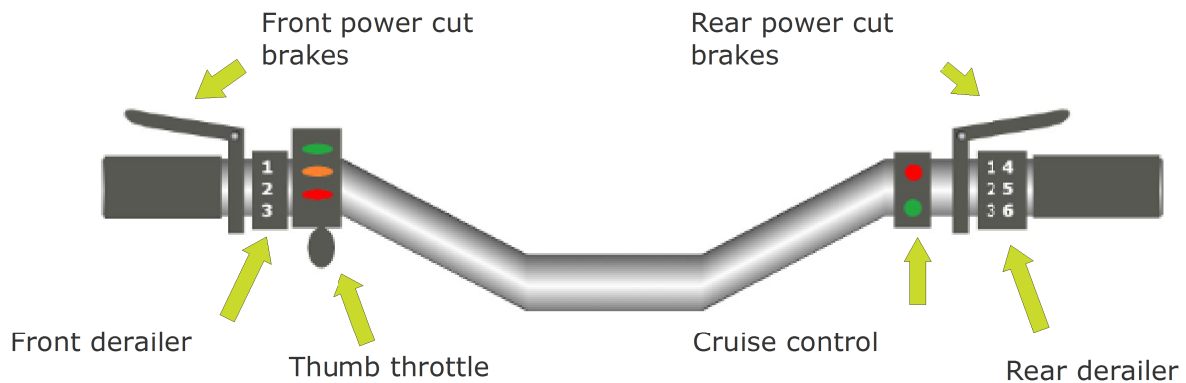
Before tightening the pedal without spanner, make sure you did not tighten askew. This could damage the crank.

4.9 Setting up the driving accessories

The MDK is delivered with a thumb throttle. It enables to have a better control of the bike because you have the handlebar firmly in hand and you keep the original handles.

If you put the throttle on the left, you can **speed up** while you **change speeds**.

Here is an example :



After placing the controls, thighten them with the key 6 pans and put the ends of the V-brakes **cables** into the new brake levers.

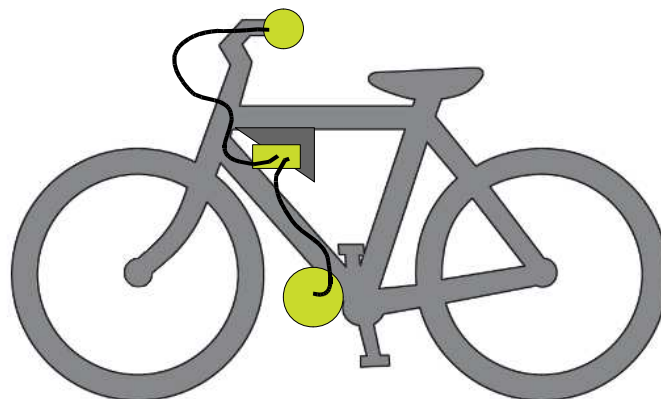
Note: the power cut brakes are not compulsory for the kit to work properly. It is just an extra security.

4.10 Setting up the wiring

Put the cables of the accessories along the frame and fix them with the tightening clamps supplied.

Plan enough length for the throttle, brakes and cruise control so you can turn the handlebar freely.

Insert the connectors into the bag through the openings.



4.11 Electric connection

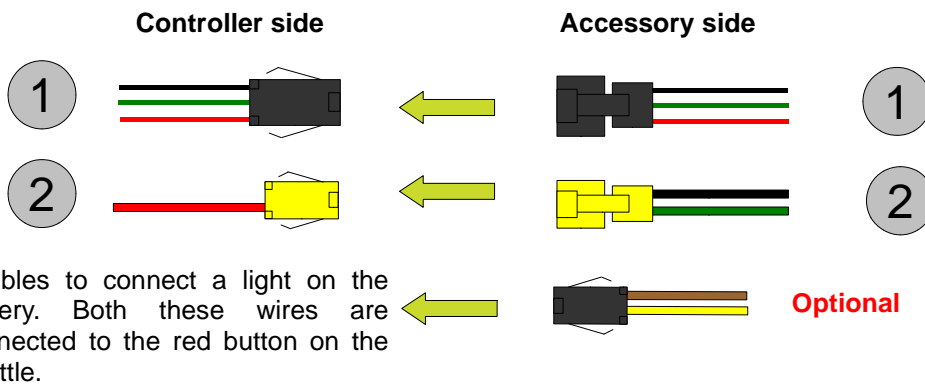
This is last and easiest step.

Here are the drawing connections of different accessories. You can connect the accessories your ordered directly to the controller inside the bag.

Each cable is labelled, you need to associate the drawings by pairs: the (1) with the (1) etc ...

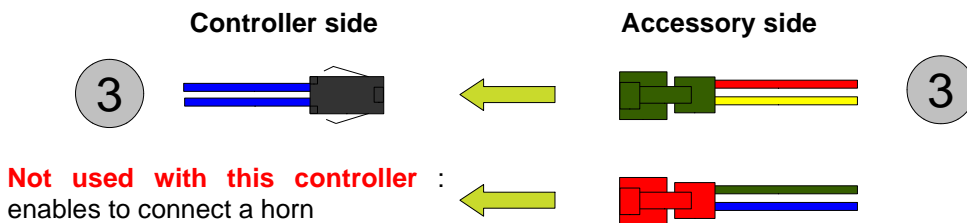
If you notice that the colour of the connector is different from the drawings below, no need to worry: what counts is the drawing on the label.

4.11.1 Connecting the throttle and charge level lights

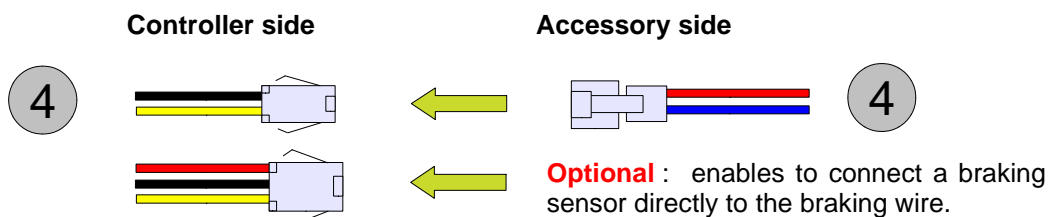


Note: if you choose a thumb throttle **without charge level lights**, the connector (2) will not be supplied, **neither the brown and yellow wires for the lights**. On the thumb throttle with no charge level lights, only the connector (1) is present.

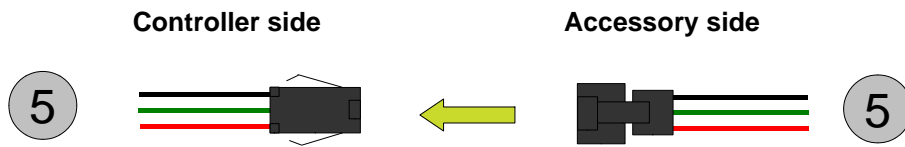
4.11.2 (Optional) Connecting the cruise control



4.11.3 (Optional) Connecting the power brake handles



4.11.4 (Optional) Connecting the Pedelec (pedalling sensor)



4.12 Adjusting the front derailleur

To make sure the chain of the bike does not overlap the chain of the motor, you need to adjust the derailleur's limit stop.

To do this, you just need to **screw** the left screw* as you can see on the picture until the passage of the chain is blocked on the last right chainwheel.



* On most of the derailleurs, the left screw enables to adjust the derailleur's limit stop. If that's not the case, you can try with the other screw or get in touch with your bike supplier.

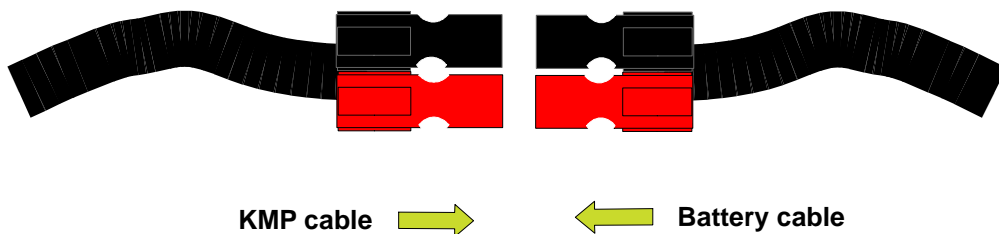
IMPORTANT: for a good use of the MDK, it is important that the **adjustment** of the derailleur's limit stop is **very precise**. If not, you will not be able to enjoy fully your MDK and you may damage the gear lever of the bike and the MDK.

4.13 Connecting the battery

The MDK's controller is already equipped with Anderson plugs to be connected on the battery.

4.13.1 Cycloboost battery

If you buy a **Cycloboost battery** at the same time as your MDK, we will have equipped the battery with Anderson connectors : you will just have to connect the power cable directly to the MDK's controller :



4.13.2 Other batteries

With each **MDK sold without battery**, we supply some Anderson connectors so you can finalize the connection.

You can consult our Use guide for the Anderson connectors Vous pouvez consulter notre guide d'installation des connecteurs Anderson:

http://www.cycloboost.com/media/guide-installation/Cycloboost_Guide_Anderson_powerpole-gb.pdf

Important: check the polarity before connecting the battery to the controller. If you make a wrong connection, you will directly burn out the MDK controller.

5 How to use the MDK

5.1 Managing the gears

In order to enjoy the best output from the motor, you need to **adapt your gear ratio to the speed of your pedalling** and avoid chain crossings.

If you pedal too fast (>100 rpm), you will increase your heart beat and get out of breath, you need to use a smaller sprocket.

On the contrary, if you overdo it and do not pedal strongly enough, you will get tired and tetanize your muscles, then you need to use a bigger sprocket.

A few examples :

- On flat roads at 25km/h, a good ratio can be gained with a chainwheel 44 prongs and a sprocket 21 prongs. .
- On a hill of 20% with a speed of 10km/h, a good ratio can be gained with a chainwheel of 32 prongs and a sprocket 32 prongs.
- On flat road (on private closed track) at 40km/h, a good ratio can be gained with a big chainwheel of 44 prongs and a sprocket 12 prongs.

We precisely detail how to manage this part in chapter 6.

5.2 Changing gears

IMPORTANT

Never speed up when you are changing speeds or gears: you need to **anticipate** and change speeds or gears **before speeding up** or apply high pressure :

- If you **change speeds** when the motor pulls the vehicle, you will prematurely damage the chain and derailleur: the speeds may not pass as easily.
- If you **change gears** when the motor pulls the vehicle, you will prematurely damage the chain and chainwheel and you will get the chain of the bike stuck in the gears : you will then need to release the chain or disassemble the chainset.

Because of the power of the motor, the risk of damaging the gear lever is quite important.

Pedal smoothly without speeding up and when the speeds or gears have been passed, **you can speed up again.**

5.3 How to avoid overheating the motor:

The MDK's motor is used correctly, **when the motor does not make sound**: you need to **adapt the speed**, the **pedalling assistance** and the **gear lever** to the situation.

You **must not try to keep the same speed on flat road and downhill** as you can consume much energy **without being aware of it and you can overheat the motor**.

With a little practice, you will easily find the right combination and take pleasure in driving the MDK.

Important: you must not overdo it uselessly. If you can not go up a steep hill, do not insist, walk and push your bike.

5.4 The risks of a bad use

If you do not respect the use recommendations, there can be some risks:

- the motor can overheat, as well as the kit's and the battery's electronics.
- You can damage the external gear lever of the bike (chain & derailleur) and internal of the motor (leverage, gears and freewheel).

6 How to maximize the use of the MDK

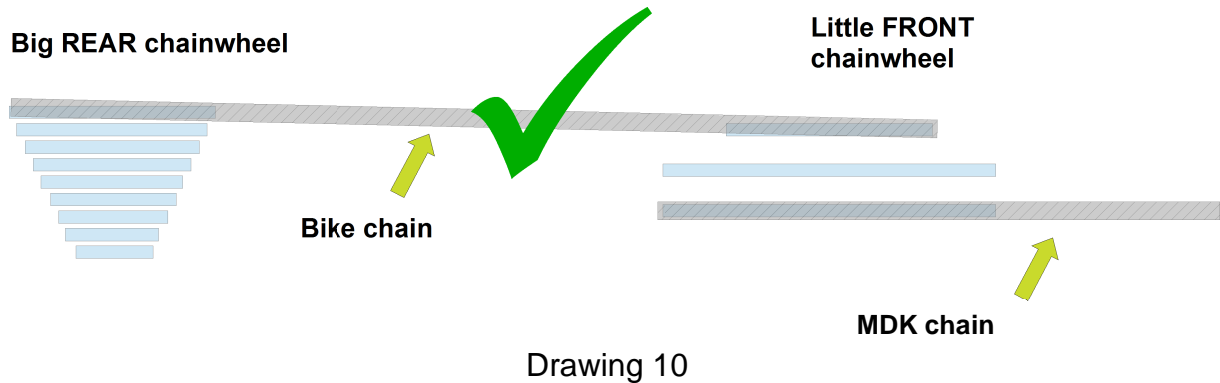
The MDK will be at its best use with a good gear ratio. The MDK has **much torque** if you know which **gear ratio to use**.

If you are not used to deal with the gear lever, here is some advice in order to master the technique.

6.1 The little gear ratio

Put «**everything on the left**», which means the chain on the little chainwheel and the big sprocket (see drawing 10): this configuration enables to have the highest torque. Ideal for starts uphill and very steep hills.

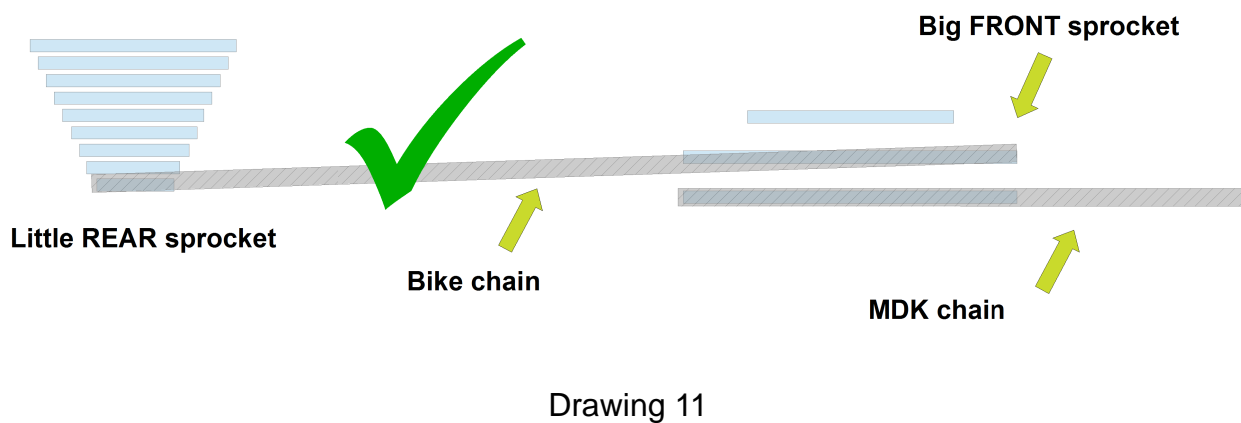
Speed up, you will notice that the MDK has much torque, but it is limited at 11km/h.



6.2 The big gear ratio

Put «**everything on the right**», which means the chain on the big chainwheel and the little sprocket (see drawing 11): this configuration enables to have the highest speed instead of the torque.

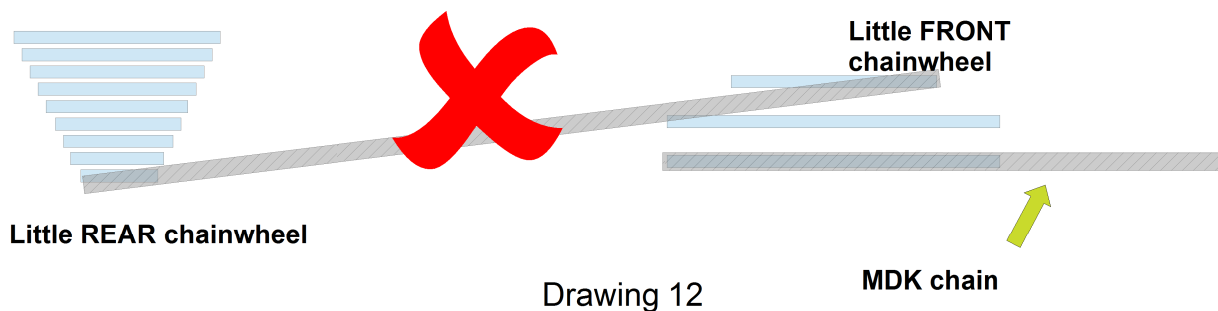
With this configuration, you can assist the MDK on flat road or downhill until more than 40km/h (with a rear sprocket of 11 prongs).



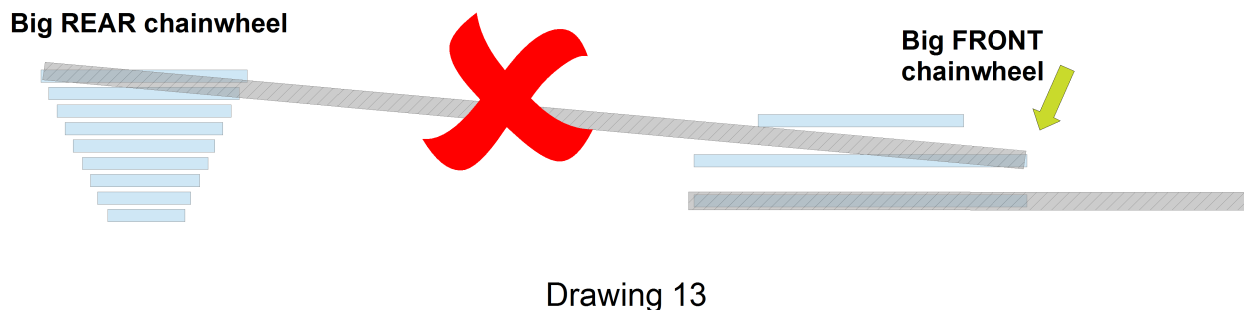
Note: if the chain still rubs against the front chainwheel, you need to adjust your gear lever.

6.3 The chain crossing (or what you must never do)

If you choose one of the little sprockets of your derailer and stay on the little chainwheel, the chain might touch the front derailleur (see drawing 12). This is normal, you did what is called a chain crossing.



In drawing 13 below, you have the example of the reverse chain crossing: the big chainwheel with the big sprocket.



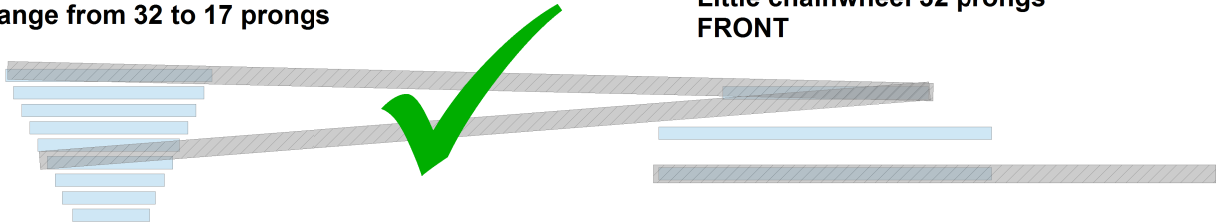
In this type of configuration, there may be rubbing and a premature wear and tear of the gear lever.

6.4 What is the use range of the chainwheels?

You can leave the « **small chainwheel** » 32 prongs and vary the gear lever from 28/32 prongs to 17/19 prongs depending on the bikes (see drawing 14).

REAR sprocket : possible range from 32 to 17 prongs

Little chainwheel 32 prongs
FRONT

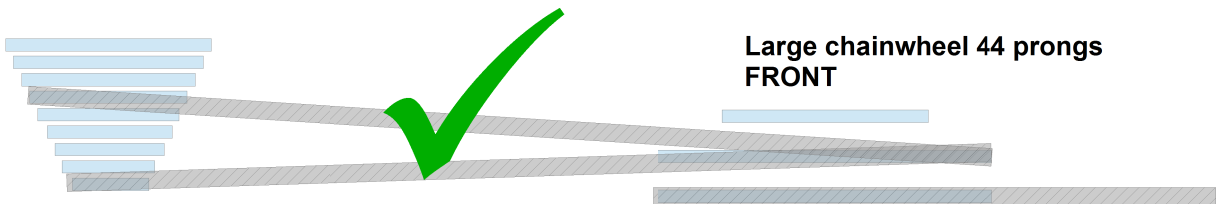


Drawing 14

You can leave the « **big chainwheel** » 44 prongs and vary the gear lever from 11/14 prongs to 18/21 prongs depending on the bikes (see drawing 15).

REAR sprocket : possible range from 11 to 21 prongs

Large chainwheel 44 prongs
FRONT



Drawing 15

7 Maintenance

There is not particular maintenance.

To clean the MDK, use a damp sponge and dry it with a cloth.

Do not clean with a Karcher® or water jet the elements of the electric kit: motor, accessories and battery.

8 Storage and transport

Do not store outside or in a damp space.

Do not carry the bike at the back of the car on a rack when it is raining without protection (risk of infiltration).

If the bike was under the rain, dry it carefully before connecting the battery.

9 Use under the rain

The MDK can perfectly be used under the rain. In case of **extended use under the rain** or in case of **heavy rains**, **protect the controls** (throttle, cruise control) with plastic bag.

10 Info

The use of hand made batteries is not covered by the guarantee.

11 Guarantee

The guarantee does not cover the failures linked to an unusual use of the products: competition, research, changes on the MDK (gear system, controller, motor ...), use with not pedalling assistance (like a motorbike or a scooter, use up hills...)

The guarantee does not cover a use of the products not conform to the information of this guide.

END OF THE DOCUMENT
