

# **USER MANUAL**

## **POWERSHIFT HUB**

***CLASSIFIED***

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# 1. Introduction

## 1.1 Symbols used

This user manual uses the following symbols:



### **TIP**

*Provides the user with suggestions and advice to perform a procedure more easily or conveniently.*



### **NOTE**

*A general comment which may offer an increased economic utility.*



### **ENVIRONMENT**

*Guidelines that must be followed when using hazardous substances and when recycling products and materials.*



### **CAUTION**

*Indicates a hazardous situation which, if the safety instructions are not followed, may lead to minor or moderate injury and/or damage to the product or the environment.*



### **WARNING**

*Indicates a hazardous situation which, if the safety instructions are not followed, **may** lead to serious injury or death, and/or serious damage to the product or the environment.*



### **DANGER**

*Indicates a hazardous situation which, if the safety instructions are not followed, **will** lead to serious injury or death.*

## 1.2 Abbreviations

Abbreviation	More details
O.L.D.	<b>O</b> ver- <b>L</b> ock-nut <b>D</b> imension The hub distance is measured from the outside of the end caps.
ITS	<b>I</b> nternal <b>T</b> orque <b>S</b> upport In the ITS version of the hub and thru axle, the frame must have a specific Classified insert on the rear brake side. The hub supports the torque via the thru axle in the Classified insert. The Classified insert must be provided by the manufacturer.
ETS	<b>E</b> xternal <b>T</b> orque <b>S</b> upport In the ETS version of the Powershift hub and smart thru axle, the torque is transmitted to the frame via a Classified torque support.

## 1.3 Intended use

The product is a wirelessly shiftable 2 speed Powershift hub which can be integrated in road and gravel bikes and mountain bikes.

The product may only be used on a bicycle:

- with compatible chains. For optimal shifting performance, the following chains are recommended:
  - Chains for cassettes with 11 speeds: Shimano CN-HG601-11, CN-HG701-11, CN-HG901-11, KMC X11, DLC11
  - Chains for cassettes with 12 speeds: Shimano CN-M8100-12, CN-M7100-12, SRAM CN-FRC-D1, KMC X12, DLC12
  - Chains for cassettes with 13 speeds: Campagnolo C13

Other chains may negatively affect shifting quality.

- combined with dropbar handlebars equipped with a hole for wiring near to the end. Example: PRO Vibe Alloy and PRO Vibe Carbon
- combined with flatbar handlebars with outer diameter of 22.2 mm
- with brake discs
- with flatmount and postmount frames
- with a frame having an installation width of 142 mm or 148 mm for the rear wheel
- in ambient temperatures (while in use) between -15 °C and +50 °C
- compatible with the Classified handlebar switches
- with a frame equipped with internal torque support or using external torque support (which has been approved for that specific frame)

**WARNING**

*Requirements for a 142 mm hub:*

- *Front chain plate with at least 40 teeth for all applications*
- *Maximum 11-34T cassette for electric bicycles*
- *Maximum 11-40T cassette for non-electric bicycles*
- *Maximum 70 Nm mid-drive motor*

**WARNING**

*Requirements for a 148 mm hub:*

- *Front chain plate with at least 30 teeth for all applications*
- *Maximum 11-40T cassette for all applications*

## 1.4 Prohibited use

It is prohibited to use the product for any other purpose than those indicated in this manual, the safety indications or other safety documents accompanying the product.

Any modification to the product may affect its safety and warranty!

It is prohibited to use any other combinations than those described in the intended use.

It is prohibited to drill holes in the handlebar for the wiring. This will void the warranty and may lead to injuries or death.

It is prohibited to open the smart thru axle or the Powershift hub for any purpose not described in the maintenance section.

It is prohibited to install parts on the product which have not been approved by Classified Cycling. These may:

- affect or prevent the operation of the product,
- endanger the safety of the user or other people,
- shorten the life of the product,
- void the compliance with the CE directives.

## 1.5 Type designation

The various Classified components are labelled with a serial number. The handlebar unit and the Powershift hub are also marked with a QR code. Scan the QR code on the registration card in order to register the component.

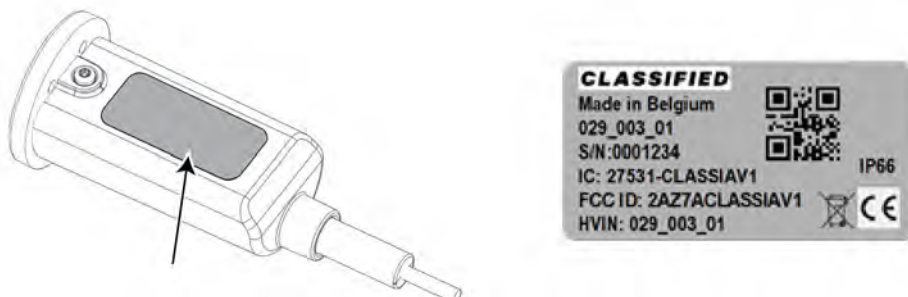


Fig. 1: Dropbar handlebar unit label

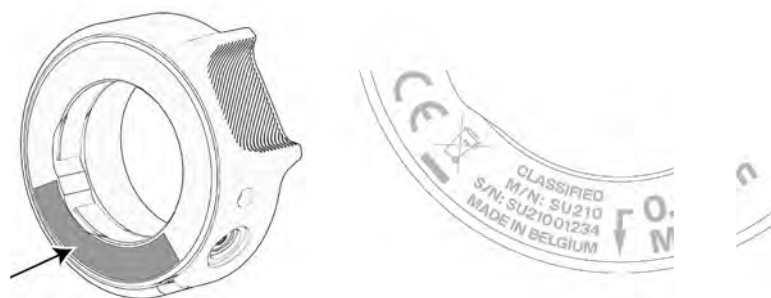


Fig. 2: Ringshifter label

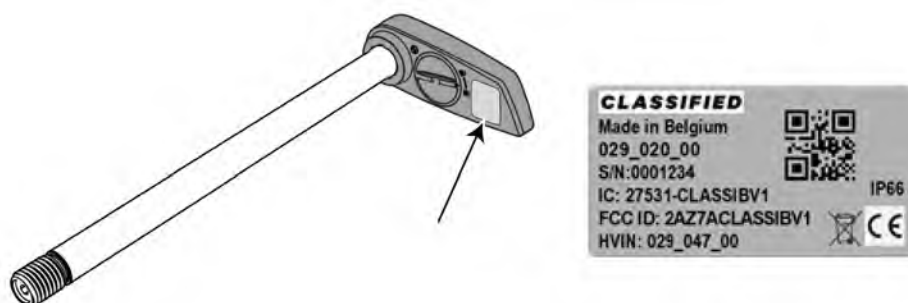


Fig. 3: Smart thru axle label

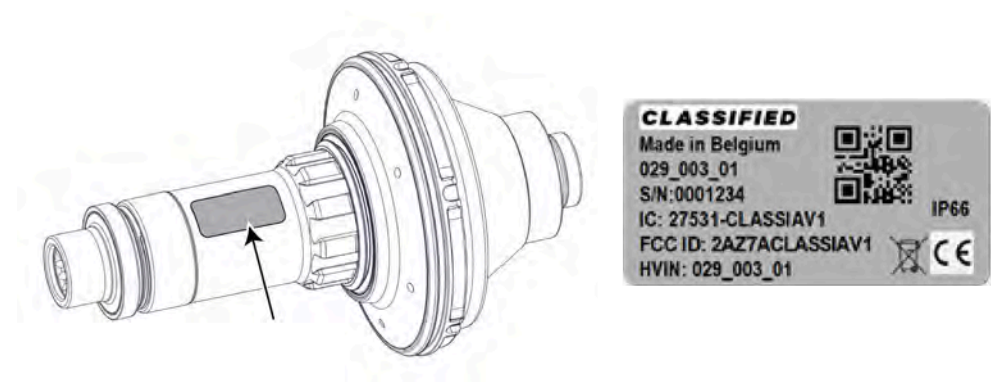


Fig. 4: Powershift hub label



## 2. Safety

### 2.1 Safety precautions

**CAUTION**

*Read the user manual before using the product! Retain this user manual for future reference. Also retain the accessories and tools included for future use.*

**WARNING**

*Never open or disassemble the Classified Powershift hub. Damage to the Classified Powershift hub and serious injuries may occur. Furthermore, the warranty will be voided.*

**WARNING**

*As well as the intended and prohibited use, the maintenance requirements must be complied with. Failure to comply correctly may result in the Classified Powershift hub or the chain breaking. This may cause serious injuries.*

**WARNING**

*The Classified Powershift hub can withstand riding in rainy weather conditions. However, do not submerge the Classified Powershift hub in water and do not clean it using a high pressure cleaner. Damage to the Classified Powershift hub may occur, leading to serious injuries as a result of defective operation.*

### 2.2 Hazardous substances

The product contains:

- A replaceable button cell battery CR1632 (only in the dropbar handlebar unit)
- A rechargeable lithium-ion battery with a capacity of 320 mAh (in the smart thru axle)
- A rechargeable lithium-ion battery with a capacity of 40 mAh in the ringshifter

The lubricant used to lubricate the chain, and hence indirectly lubricating the cassette, is a hazardous substance. Carefully read the lubricant's safety instructions.

### 3. Description

#### 3.1 ITS and ETS

For each internal hub gear, the torque must be supported on the frame. There are 2 ways to do this for 142 mm hubs: ITS and ETS. 148 mm hubs can only be combined with ETS.

##### ITS (Internal Torque Support)

In the ITS version of the hub and thru axle, the frame must have a specific Classified insert on the rear brake side. The hub supports the torque via the smart thru axle in the Classified insert. The Classified insert must be provided by the manufacturer.

##### ETS (External Torque Support)

In the ETS version of the Powershift hub and smart thru axle, the torque is transmitted to the frame via a Classified torque support. The torque support must be chosen based on the frame type and brake type.

##### See also

- Selecting and installing the correct torque support for a flatmount frame on page 21
- Selecting and installing the correct torque support for a postmount frame on page 25

#### 3.2 Part names

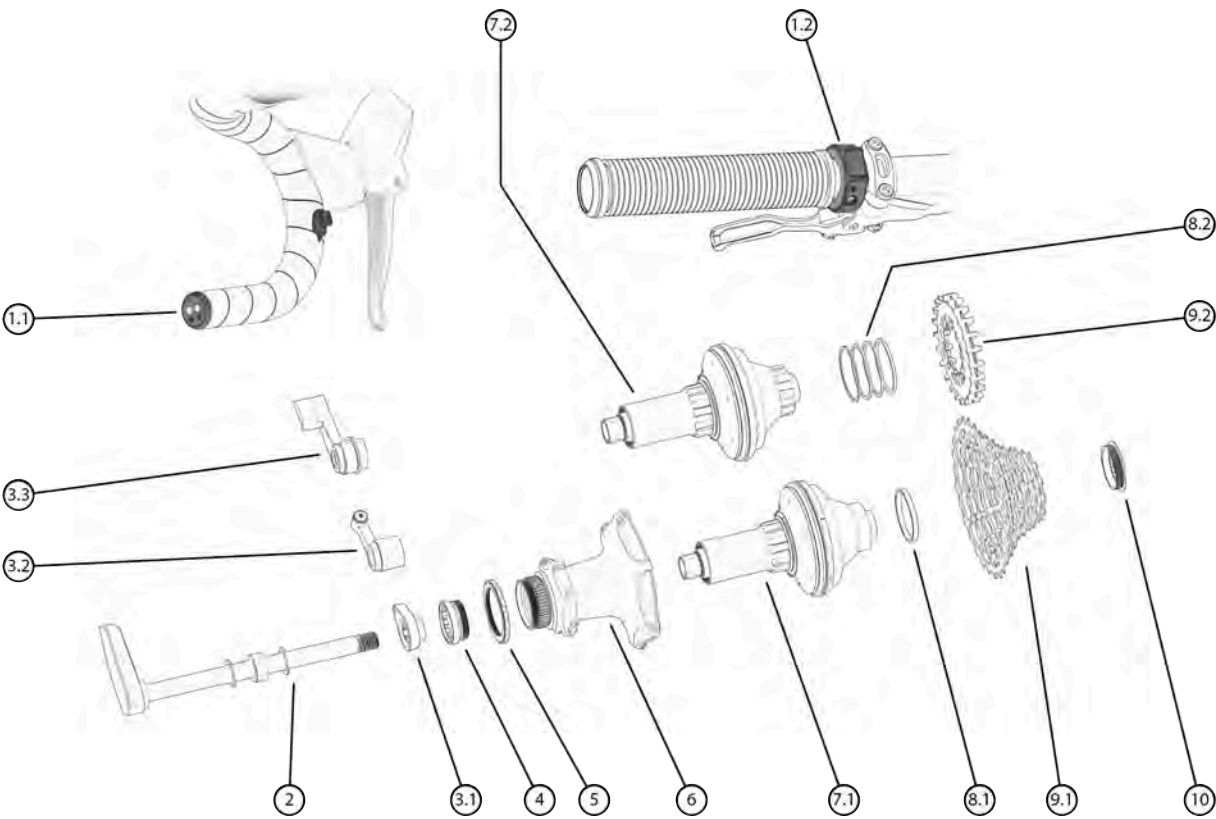






Fig. 5: Parts

No.	Part	Variant no.	Variant	Explanation
1	Handlebar unit	1.1	Wireless dropbar handlebar unit	The wireless dropbar handlebar unit is installed into the left-hand side of the handlebar and is operated by a shifter or satellite buttons compatible with Classified. The dropbar handlebar unit is powered by a battery.
		1.2	Ringshifter	The ringshifter can be mounted on the left or right side of the right handlebar. The module is powered by a battery and charged by a pogo connector.
2	Smart thru axle	2.1	-	The smart thru axle receives the wireless shift signal from the handlebar unit and triggers the Powershift hub using contactless energy transfer. The smart thru axle is equipped with a rechargeable battery. The axle diameter is 12 mm. DiĠerent lengths are available for a perfect fit to any frame. Various threaded ends are available to fit the frame dropout. The threaded ends come in various thread sizes and lengths.
3	Brake-side end cap	3.1	Without torque support (only with ITS)	This end cap seals the Powershift hub and interfaces to the inside of the frame.
		3.2	With flatmount torque support	This end cap seals the Powershift hub and provides flatmount torque support. DiĠerent torque supports are available for a perfect fit to any frame.
		3.3	With postmount torque support	This end cap seals the Powershift hub and provides postmount torque support. DiĠerent torque supports are available for a perfect fit to any frame.
4	Hubshell lock ring	4.1	-	The hubshell lock ring ensures that the hubshell is fixed to the Powershift hub.
5	Brake disc lock ring	5.1	-	The brake disc lock ring fixes the center lock brake disc to the Classified hubshell.
6	Hubshell	6.1	Hubshell 142	<p>The hubshell is attached to the rim by spokes. You can equip multiple rims with a Classified hubshell and use them in combination with a single 142 Classified Powershift hub.</p> <p> <b>NOTE</b> Combination with a diĠerent Classified Powershift hub variant is not possible.</p>

No.	Part	Variant no.	Variant	Explanation
		6.2	Hubshell 148	<p>The hubshell is attached to the rim by spokes. You can equip multiple rims with a Classified hubshell and use them in combination with a single 148 Classified Powershift hub.</p> <p> <b>NOTE</b> Combination with a different Classified Powershift hub variant is not possible.</p>
7	Powershift hub	7.1	Powershift hub 142 cassette interface	<p>The Powershift hub 142 cassette interface contains the shifting mechanism and is controlled electronically. This hub is designed specifically for hubs with 142 mm O.L.D. and a 12 mm thru axle. The hub does not contain a battery and gets its shifting power from the smart thru axle. This hub can only be used with Classified cassettes.</p>
		7.2	Powershift hub 142 9-spline interface	<p>The Powershift hub 142 9-spline interface contains the shifting mechanism and is operated electronically. This hub is designed specifically for hubs with 142 mm O.L.D. and a 12 mm thru axle. The hub does not contain a battery and gets its shifting power from the smart thru axle. The hub can be used with standard 9-spline belt sprockets or chainrings supplied by third parties.</p> <p> <b>NOTE</b> It is NOT possible to mount a standard cassette on this interface!</p>
		7.3	Powershift hub 148 cassette interface	<p>The Powershift hub 148 cassette interface contains the shifting mechanism and is controlled electronically. This hub is designed specifically for hubs with 148 mm O.L.D. and a 12 mm thru axle. The hub does not contain a battery and gets its shifting power from the smart thru axle. This hub can only be used with Classified cassettes.</p>
		7.4	Powershift hub 148 9-spline interface	<p>The Powershift hub 148 9-spline interface contains the shifting mechanism and is operated electronically. This hub is designed specifically for hubs with 148 mm O.L.D. and a 12 mm thru axle. The hub does not contain a battery and gets its shifting power from the smart thru axle. The hub can be used with standard 9-spline belt sprockets or chainrings supplied by third parties.</p> <p> <b>NOTE</b> It is NOT possible to mount a standard cassette on this interface!</p>

No.	Part	Variant no.	Variant	Explanation
8	Center washer	8.1	Cassette center washer	This center washer ensures that the cassette seamlessly connects to the Powershift hub.
		8.2	9-spline spacer kit	The 9-spline spacer kit ensures that the 9-spline sprocket connects seamlessly to the Powershift hub. The spacer kit contains spacers in various thicknesses to achieve the optimal belt / chain line.
9	Cassette / sprocket	9.1	Classified cassette	The Classified cassette is mounted on the Powershift hub with cassette interface. Various cassettes are available.
		9.2	9-spline sprocket	The 9-spline sprocket is mounted on a Powershift hub with 9-spline interface. Various 9-spline sprockets are available.
10	Lock ring	10.1	Cassette lock ring	The cassette lock ring fixes the cassette to the Powershift hub. Color: black
		10.2	9-spline sprocket lock ring	The 9-spline sprocket lock ring attaches the 9-spring sprocket to the Powershift hub. Color: silver

## 4. Principles of operation

### 4.1 The operation of the Classified Powershift hub

Through a compatible shifter or satellite button, a shifting command is sent to the handlebar unit. The handlebar unit wirelessly transmits the shifting command to the smart thru axle using Bluetooth®. The smart thru axle transfers the power needed for shifting and the shifting command to the Powershift hub. The shifting takes place internally within the Powershift hub.

If the smart thru axle does not move or receive a shifting command for 20 minutes, it enters sleep mode. When the smart thru axle is in sleep mode and the handlebar unit sends a shifting command, it takes a maximum of 5 seconds for the smart thru axle to wake up from sleep mode. Once that happens, you can start shifting with the Powershift hub again. As long as the smart thru axle is not in sleep mode, shifting will happen immediately when a shifting command is transmitted.

The smart thru axle transmits your current gear ratio and battery status to your GPS bike computer (not included) using ANT+. Consult the handbook of your bike computer for more information.

The Powershift hub has two gears:

- A 1:1 ratio where the speed of the cassette is equal to the speed of the wheel. This is similar to the large chainring on a traditional 2x.
- A 0.686 ratio (reduction ratio), where the speed of the wheel is lower than the speed of the cassette. This is similar to the small chainring on a traditional 2x. Example:  $50 \times 0.68 = 34$ .

Shifting from 1:1 to the reduction ratio is like shifting from the large to the small chainring on a traditional 2x.

Large front chainring	Virtual small front chainring (Classified) *
60	41
58	40
56	38
54	37
52	36
50	34
48	33
46	32
44	30
42	29
40	27
38	26
36	25

Large front chainring	Virtual small front chainring (Classified) *
34	23
32	22
30	21

\*: These values are rounded.

## 5. Configuration

### 5.1 Selecting and preparing the correct smart thru axle

First check if the Powershift hub can be installed on your bicycle. Please refer to Intended use on page 5.

Tools required:

- Dealer toolkit
- Classified frame tool
- 3 mm socket wrench
- Cassette lock ring tool with internal diameter of > 19.5 mm
- External brake disc lock ring tool
- Torx T5 screwdriver (comes with the dropbar handlebar unit)



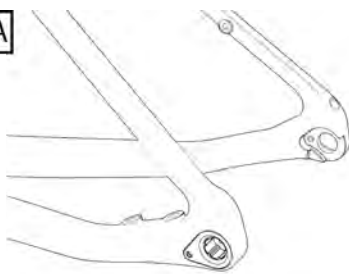
#### NOTE

*If you do not have the required tools, it is advisable to obtain them from an official Classified dealer.*

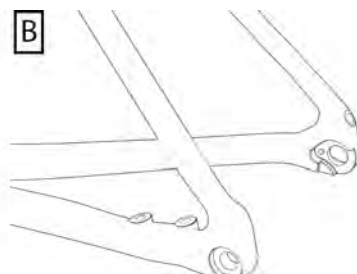
You must complete all the steps in this procedure, unless stated otherwise!

1. Measure the available distance (O.L.D.) for the hub.
  - Is the measured distance 142 mm? Go to the next step.
  - Is the measured distance 148 mm? Go to step 3.
2. Check how to install the torque support on the frame.

**A**

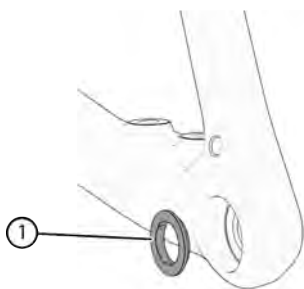


**B**

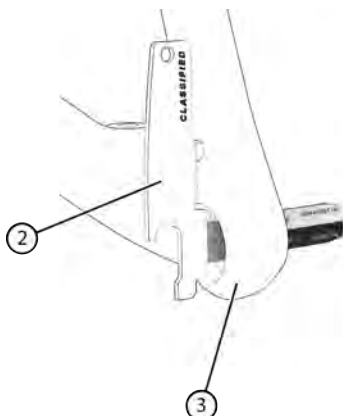


- The frame is designed for ITS (A) (Internal Torque Support). The thru axle and the brake side end cap are used as torque support. Go to step 11.
  - External torque support must be mounted on the brake side. ETS (B) (External Torque Support). Go to the next step.
3. Check if the outside of the frame dropout on the brake side is conical.
    - If it is conical, go to the next step.
    - If it is not conical, go to step 5.
  4. Install a conical ring (1) in the frame.





5. Insert the Classified frame tool (2) completely into the frame dropout (3) on the brake side.



6. Select the thru axle based on the marking that matches the inside of the inner frame dropout. In this illustration, the distance between A and B is for 142 mm.

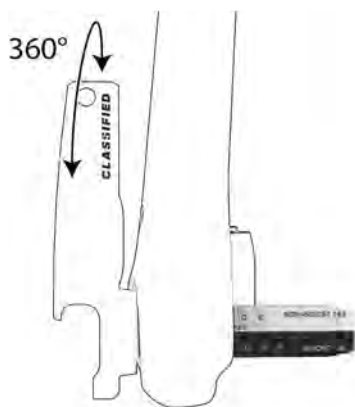


- For 142: A, B, C, D
  - For 148: C, D, E, F
7. Slide the Classified frame tool to the left until the surface of the frame dropout lines up with the selected thru axle marking. In this illustration, you line up with 142 mm from B.



8. Turn the Classified frame tool 360°. If the Classified frame tool cannot keep turning, slide it to the left until it can rotate freely. Now look at the Classified frame tool to check the new position of the frame dropout.

For example, C instead of B.

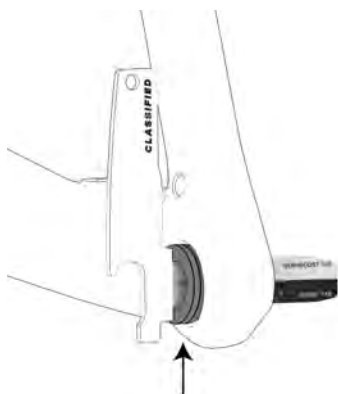


9. Check if there is still space left between the Classified frame tool and the frame.



- If there is no space left between the Classified frame tool and the frame, go to step 11.
- If there is space left between the Classified frame tool and the frame, go to the next step.

10. Add spacers until the space has been filled.



11. Determine the correct pitch for the threaded end.

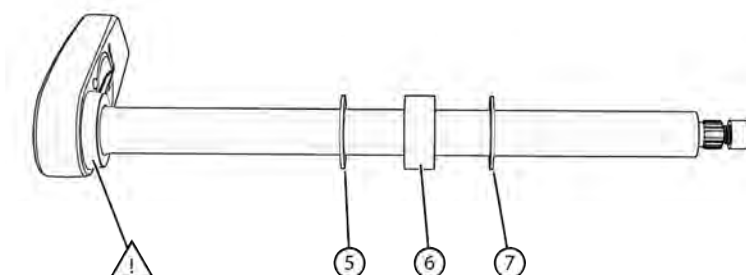
- Consult your bicycle manufacturer's website for the information.
- Check the marking on the previous thru axle. Example: M12 x P1.5.
- Compare the thread length of the previous thru axle to this thread end.



12. Carefully try to screw the thru axle into the frame to check if you have chosen the right pitch for the thread end. Unscrew the thru axle again.
13. Check how long the threaded end needs to be by placing the smart thru axle beside the original axle. Choose the closest equivalent, preferably a bit longer.

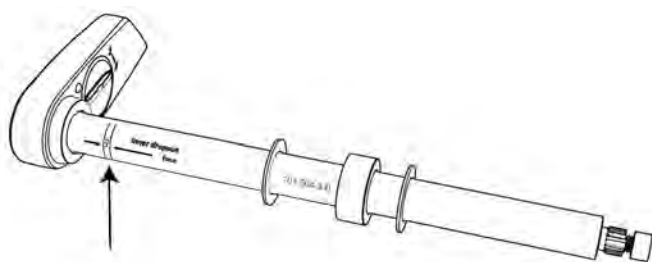


14. Place the spacers on the thru axle. If a metal spacer (6) has to be added, ALWAYS slide it onto the thru axle between 2 plastic rings (5) (7).

**NOTE**

*The edge on the side of the thru axle lever is not a spacer(!).*

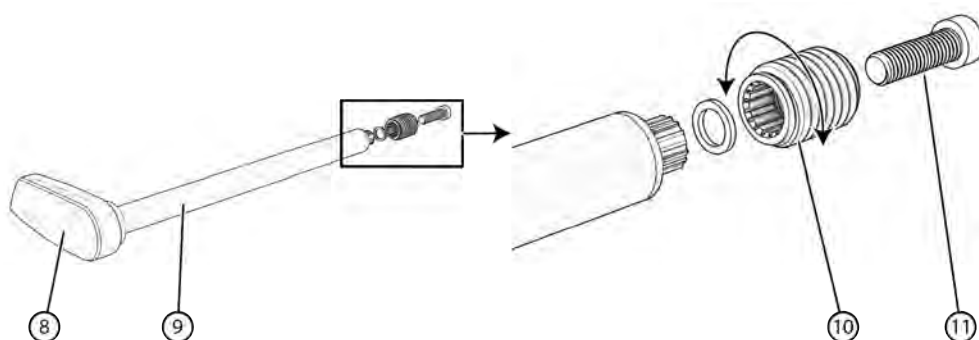
15. Install the thru axle in the frame.
16. Check that the marking is aligned with the inside of the dropout.



- The position of the thru axle is OK. Go to the next step.
- The position of the thru axle is NOT OK. Go back to step 12 to place the correct number of spacers.

17. Install the smart thru axle (9), ensuring that the thru axle lever (8) points towards the handlebar unit.

If required, loosen the smart thru axle again and loosen the socket bolt (11) on the end of the smart thru axle. Now the stud (10) can be removed from the axle and turned. Retighten the smart thru axle and check that the thru axle lever points towards the handlebar unit. Repeat this until the thru axle lever points in the right direction.



#### NOTE

Only the threaded end may be removed from the axle. No other components of the thru axle should be removed!

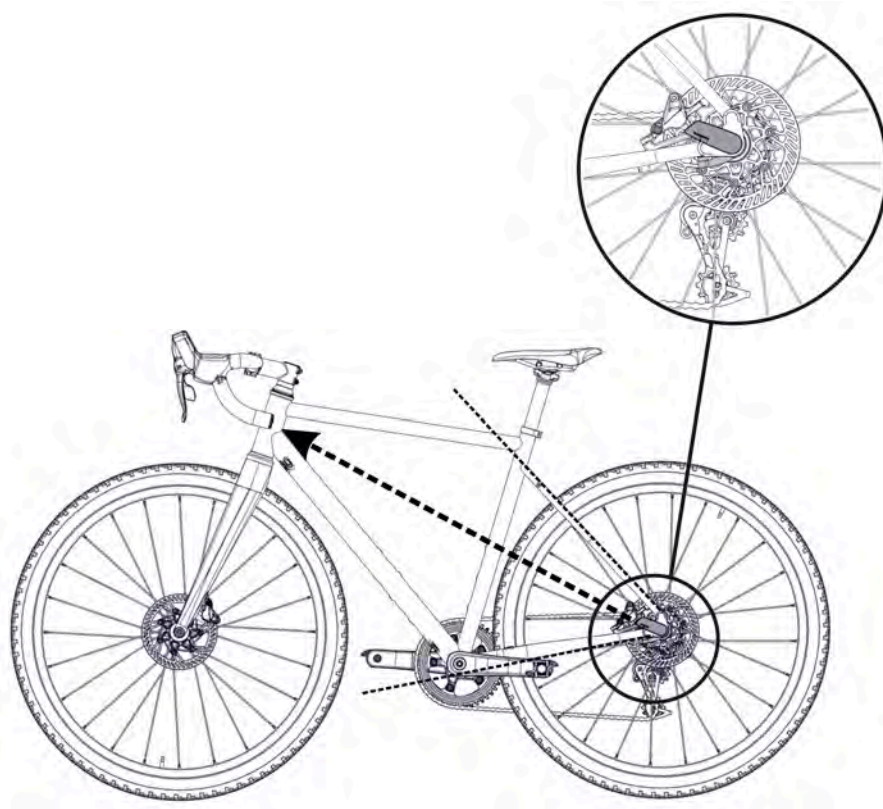
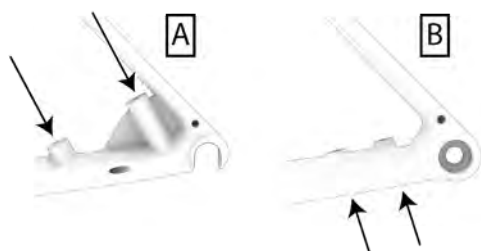


Fig. 6: Thru axle lever position

18. Apply locking compound to the socket bolt and tighten the threaded end to a torque of 4 Nm.
19. Charge the smart thru axle. Please refer to Recharging the battery of the smart thru axle on page 39.
20. Install the smart thru axle.

## 5.2 Identifying the bicycle frame type (postmount - flatmount)

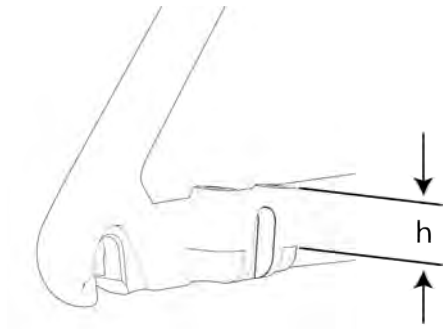


1. Look at the frame from the back, at the level of the frame dropout.
2. Check how the brake calipers are installed:
  - The brake caliper is attached with screws through the top of the frame: postmount frame. (A)
  - The brake caliper is attached with screws through the underside of the frame: flatmount frame. (B)

## 5.3 Selecting and installing the correct torque support for a flatmount frame

First check that the bicycle has a flatmount frame. Please refer to Identifying the bicycle frame type (postmount - flatmount) on page 21.

1. Measure the assembly height of the brake caliper and make a note of that distance.



2. Check if the flatmount frame was made for 140 mm or 160 mm brake discs.  
Not sure? Check the documentation for your bicycle.
3. Select the compatible torque support in the overview table. Please refer to Overview of options for torque supports and spacers for a flatmount frame on page 24.
  - a) In the first column, look up the assembly height for the brake caliper that you measured in step 1.
  - b) In the corresponding column for "140 flatmount frame" or "160 flatmount frame", select the compatible torque support that requires the fewest millimeters in spacers.

For example: For an assembly height of 18 mm and a 140 flatmount frame, you select torque support 00147\_XX-A because it only needs 2 mm spacers.

**NOTE**

*If the torque support turns out not to fit after following this procedure, then use the torque support that requires more spacers. Example: torque support 00147\_XX-A with 7 mm spacers.*

4. Make a note of the spacers you need (in mm).
5. Choose the right thread length for the bolt on the torque support by adding 8 mm to the height distance and rounding up to the nearest available thread length (8 mm, 12 mm or 16 mm).  
Example: 2 mm + 8 mm = 10 mm. Rounded up, the thread length should be 12 mm.
6. Gather all the components you need:
  - Torque support
  - Spacers
  - Bolt
7. Slide the spacers onto the bolt.
8. Apply a drop of locking compound on the threaded part of the bolt.
9. Carefully screw the bolt into the torque support and tighten it with a torque wrench to at least 0.5 Nm and at most 0.7 Nm.

**CAUTION**

*Do not overtighten the plastic bolt! If you tighten it to a torque higher than 0.7 Nm, the bolt may break off.*

10. Check that the Powershift hub has been fully assembled and attached in the hubshell.
11. Slide the torque support onto the Powershift hub.
12. Install the wheel in the frame and tighten the smart thru axle.
13. Make sure that the torque support does not touch the frame, but aligns neatly with the flat fastening bolt.
  - If the torque support does not touch the frame, then it has been installed successfully.
  - If the torque support touches the frame, repeat the procedure from step 2, but now use the torque support that requires more millimeters in spacers.

**NOTE**

*If you have already gone through the procedure twice, then use the procedure for the postmount frame, even if you have a flatmount frame.*

## 5.4 Overview of options for torque supports and spacers for a flatmount frame

	140 flatmount frame				160 flatmount frame
Type of torque support →	00147_XX-A	00147_XX-B	00147_XX-C	00147_XX-D	00148_XX-A
Assembly height of brake caliper (mm) ↓	Spacers (mm)				
15	5	10	-	-	10
16	4	9	-	-	9
17	3	8	-	-	8
18	2	7	-	-	7
19	1	6	-	-	6
20	0	5	10	-	5
21	-	4	9	-	4
22	-	3	8	-	3
23	-	2	7	-	2
24	-	1	6	-	1
25	-	0	5	10	0
26	-	-	4	9	-
27	-	-	3	8	-
28	-	-	2	7	-
29	-	-	1	6	-
30	-	-	0	5	-
31	-	-	-	4	-
32	-	-	-	3	-
33	-	-	-	2	-
34	-	-	-	1	-
35	-	-	-	0	-



## 5.5 Selecting and installing the correct torque support for a postmount frame

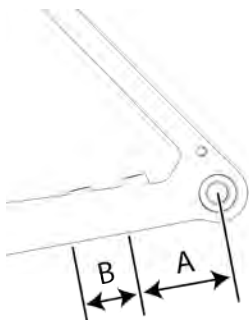
First check that the bicycle has a postmount frame. Please refer to Identifying the bicycle frame type (postmount - flatmount) on page 21.



### NOTE

*If you have already gone through the procedure twice, then use the procedure for the flatmount frame, even if you have a postmount frame.*

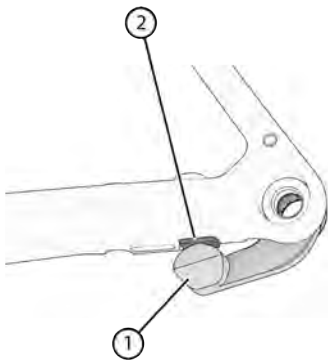
1. Check how much room is available at the frame dropout of the non-drive side. I.e., make sure there are no obstructions in this space.



2. Select the torque support according to the distance measured.

Available distance	Type of torque support
There are no obstructions between 0 mm and 40 mm (A)	102.423-XX-B
There are no obstructions between 40 mm and 60 mm (B), but there are obstructions between 0 mm and 40 mm.	102.423-XX-A

3. Check that the Powershift hub has been fully assembled and attached in the hubshell.
4. Slide the torque support onto the Powershift hub.
5. Clean the frame dropout of the left rear fork with degreaser or alcohol wipes.
6. Mount the wheel in the frame. Gently tighten the smart thru axle such that the wheel is fixed in place while the torque support can rotate freely.
7. Determine the area where the torque support will touch the frame.
8. Remove the paper backing from the tape.
9. Stick the tape onto the frame at the place where the torque support will touch the frame.
10. Press on the tape for 30 seconds to ensure good adhesion.
11. Check that the torque support (2) touches the frame where the tape is located (1).



12. Double-check by repeating this procedure to confirm that you selected the right length for the torque support.

- If the torque support fully touches the frame without obstructions, then it has been installed successfully.
- If the torque support is blocked by an obstruction or does not fully touch the frame, it has not been installed successfully. Please contact Classified Cycling.

## 6. Storage and transport

### 6.1 Storing and transporting the Classified Powershift hub

If you are not going to use the Classified Powershift hub for an extended period of time and want to store it for future use, recharge the battery of the smart thru axle once every 3 months.

The temperature for storage (when not in use) or transport is minimum -15 °C and maximum 60 °C.

After extended transport, it is recommended to recharge the battery of the smart thru axle. Vibrations during transport activate the smart thru axle for a longer period.

## 7. Assembly and installation

### 7.1 What is included?

Check that the following items are included. If not, please contact your distributor.

- The Classified Powershift hub, consisting of:
  - Handlebar unit (including battery)
  - Smart thru axle + tape to protect the frame (if torque support is on flatmount frame)
  - Brake-side end cap
  - Hubshell lock ring
  - Brake disc lock ring
  - Hubshell (part of the Classified ready sprocket set)
  - Powershift hub + center washer
  - Cassette / sprocket + spacer kit
  - Cassette lock ring
- Quick Start Guide
- USB charging cable 1.5 m
- Torx T5 screwdriver (for the dropbar handlebar unit)
- Registration card



#### NOTE

*Check that all parts are undamaged. Please contact Classified Cycling if that is not the case.*

### 7.2 Replacing a wheel with a Classified Powershift hub

This procedure also applies to different types of bicycles than the model shown here, such as mountain bikes and city bikes.

Tools required:

- Torque wrench
- Lock ring tool
- Chain whip (only if you also want to change the cassette)
- Sprocket remover (only if you also want to swap out the belt sprocket)

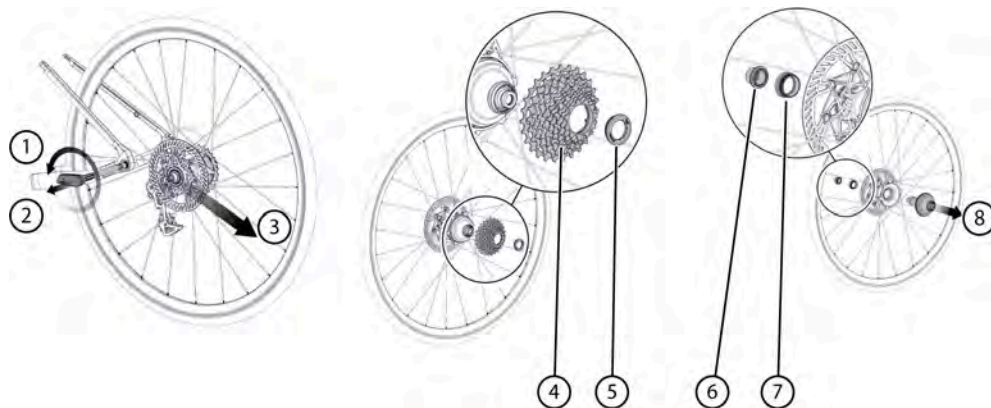


Fig. 7: Replacing a wheel

1. Shift the Powershift hub to the 1:1 ratio and shift the cassette to the smallest sprocket using the rear derailleur.
2. Remove the wheel from the bicycle as you would remove any traditional wheel by removing the smart thru axle.
  - a) Declutch the rear derailleur by setting the clutch to Off.
  - b) Turn the smart thru axle anti-clockwise (1).
  - c) Pull the smart thru axle out of the wheel (2).
  - d) Push the rear derailleur backwards and carefully remove the wheel from the bicycle (3).
3. If the cassette or belt sprocket also needs changing, go to the next step. If the cassette or belt sprocket does not need changing, go to step 6.
4. Unscrew the lock ring (5) of the cassette or belt sprocket using the lock ring tool.  
If it is not shifted to the 1:1 ratio, you will need to use a chain whip to hold the cassette or a strap wrench to hold the belt sprocket.
5. Remove the cassette (4) or belt sprocket from the Powershift hub.
6. Remove the end cap (6) on the side of the brake disc.
7. Unscrew the hubshell lock ring (7) using the lock ring tool.
8. Pull the Powershift hub (8) out of the hubshell.
9. Acquire a new wheel with an installed and certified Classified hubshell.
10. Place the Powershift hub into the hubshell and complete the installation in the reverse order of removal. Use the following tightening torques:
  - Cassette / belt sprocket lock ring tightening torque: minimum 30 Nm and maximum 40 Nm. You only need to do this if the cassette or the belt sprocket was also changed.
  - Hubshell lock ring tightening torque: minimum 30 Nm and maximum 40 Nm.

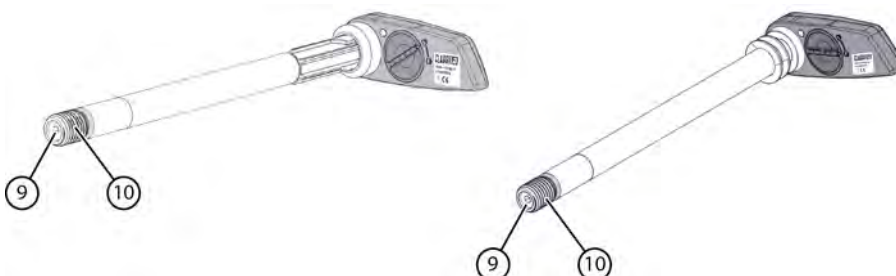
**NOTE**

*During initial installation of a Powershift hub in a postmount frame, you need to stick the protective tape onto the frame.*

11. Reinstall the end cap on the disc brake side.
12. Carefully install the wheel in the bicycle.
13. Install the smart thru axle, ensuring that the thru axle lever points towards the handlebar unit.  
If required, loosen the smart thru axle again and loosen the socket bolt (9) on the end of the smart thru axle. Now the stud (10) can be removed from the axle and turned. Retighten the smart thru axle and check that the thru axle lever points towards the handlebar unit. Repeat this until the thru axle lever points in the right direction.

**NOTE**

*Only the threaded end may be removed from the axle. No other components of the thru axle should be removed!*



*Fig. 8: Thru axle lever position adjustment*

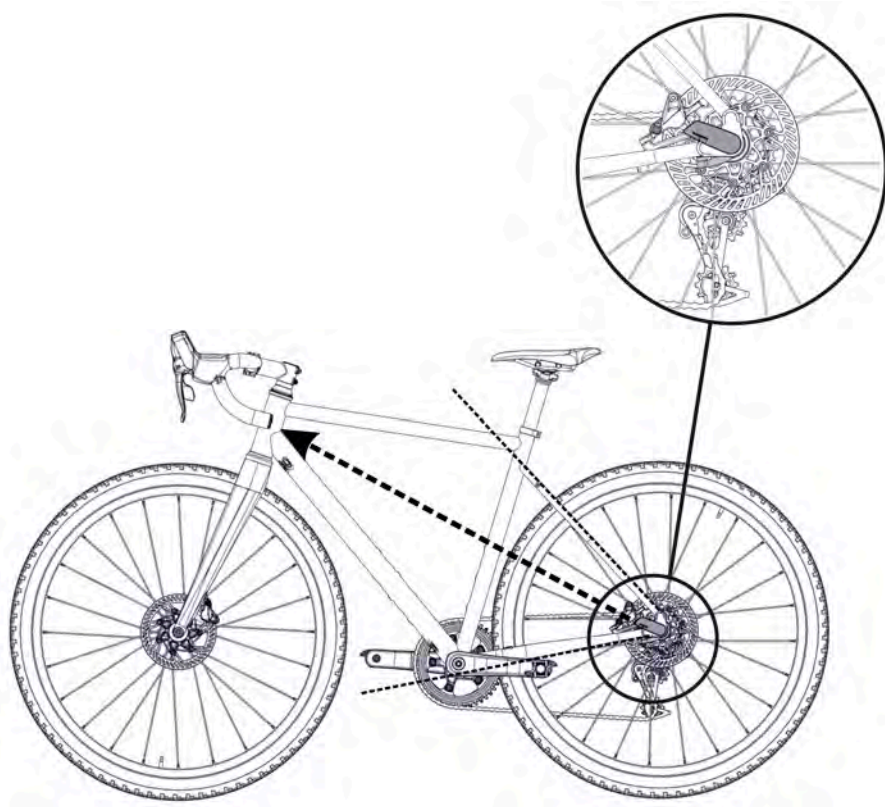


Fig. 9: Thru axle lever positioned toward handlebar unit

14. Apply locking compound to the socket bolt and tighten the threaded end to a torque of 4 Nm.
15. Install the smart thru axle.
16. ETS only: Place the torque support against the frame.

### 7.3 Bluetooth® pairing (dropbar handlebar unit)

On delivery, the handlebar unit is already paired correctly to the smart thru axle through Bluetooth®. If they become unpaired or you buy an additional Classified Powershift hub that you want to operate using the same handlebar unit, you will have to create a new Bluetooth® connection.



#### NOTE

Bluetooth® pairing is possible with smartphones, tablets or other electronic devices that have the Classified app installed. It is also possible to use ANT+ to link to a cycling computer or similar device to show which gear you are in.

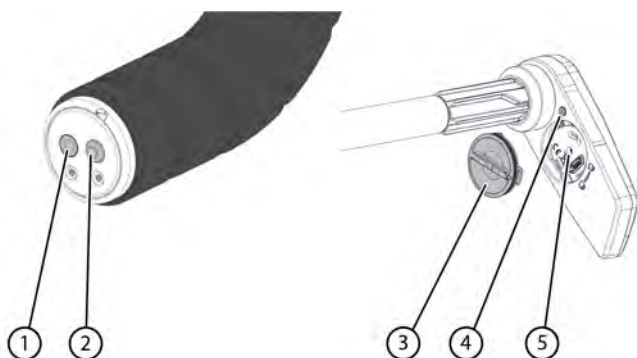


Fig. 10: Bluetooth® pairing

1. Remove the smart thru axle.
2. Turn the bayonet lock (3) counter-clockwise past the release sign and the bayonet lock is automatically released.
3. Use a standard needle-nosed tool (such as a Torx T5 screwdriver) to push and hold the button (5) of the smart thru axle for at least 5 seconds until the LED (4) starts to blink.
4. Press and hold the button (2) of the handlebar unit for at least 5 seconds until the LED (1) starts to blink.  
When both LEDs go off at the same time, the Bluetooth® connection has been established.
5. Check the connection by shifting the Classified Powershift hub using the shifter or the satellite buttons.  
The LED of the handlebar unit and the LED of the smart thru axle both briefly light up when shifting.

## 7.4 Bluetooth® pairing (ringshifter)

On delivery, the handlebar unit is already paired correctly to the smart thru axle through Bluetooth®. If they become unpaired or you buy an additional Classified Powershift hub that you want to operate using the same handlebar unit, you will have to create a new Bluetooth® connection.



### NOTE

Bluetooth® pairing is possible with smartphones, tablets or other electronic devices that have the Classified app installed. You can use the app to change the direction up or down, for example. It is also possible to use ANT+ to link to a cycling computer or similar device to show which gear you are in.

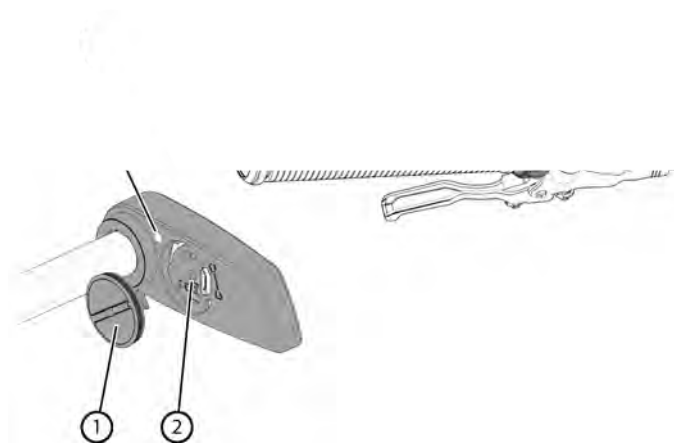


Fig. 11: Bluetooth® pairing

1. Remove the smart thru axle.
2. Turn the bayonet lock (1) counter-clockwise past the release sign and the bayonet lock is automatically released.
3. Use a standard needle-nosed tool (such as a Torx T5 screwdriver) to push and hold the button (2) of the smart thru axle for at least 5 seconds until the LED (5) starts to blink.
4. Push the ringshifter (4) up and hold it for at least 5 seconds, then let go.  
The LED (3) blinks green for 5 seconds.
5. In the 5 seconds after releasing the handlebar unit in the previous step, push the ringshifter down and hold it for 1 second, then let go.  
The device is pairing when the LED blinks green for up to 60 seconds. If the LED is not blinking, the device is not pairing. In that case, try again from step 3.
  - If the LED blinks a bit slower for 1.5 seconds within those 60 seconds, pairing has been successful!
  - If the LED blinks red for 1.5 seconds after the 60 seconds are over, pairing was unsuccessful.
6. Check the pairing by shifting the Classified Powershift hub using the ringshifter.  
The LED of the ringshifter and the LED of the smart thru axle both briefly light up when shifting.

## 8. Initial use

### 8.1 Initial use of the dropbar handlebar unit

Before using the Classified Powershift hub, it is recommended that you check the following:

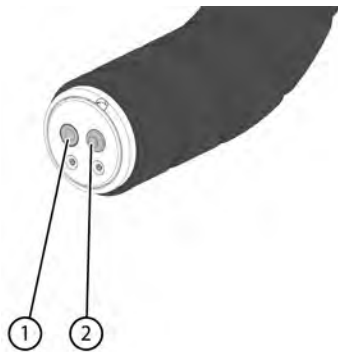


Fig. 12: Button and LED on the handlebar unit

1. Check the handlebar unit. Press and hold the button (2) less than 2 seconds in order to check the battery status. If the LED (1) blinks red or does not blink, the battery must be replaced. Please refer to Replacing the battery of the dropbar handlebar unit on page 37.
2. Recharge the battery of the smart thru axle. Please refer to Recharging the battery of the smart thru axle on page 39.
3. Wake up the handlebar unit by shifting once and then waiting 3 seconds.  
The vibration-sensitive smart thru axle will start up automatically when the bicycle moves.

### 8.2 Initial use of the ringshifter

Before using the Classified Powershift hub, it is recommended that you check the following:

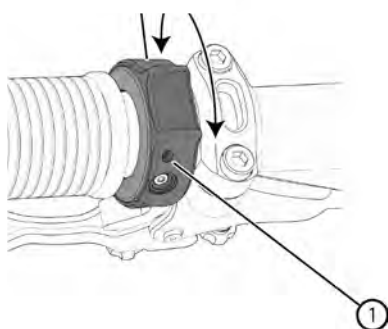


Fig. 13: Ringshifter

1. Check the ringshifter (2). Press the ringshifter in one direction and hold it for less than 2 seconds, then press the ringshifter in the other direction and hold it for less than 2 seconds.  
If the LED (1) blinks red or does not blink, the battery must be charged. Please refer to Recharging the battery of the ringshifter on page 38.
2. Recharge the battery of the smart thru axle. Please refer to Recharging the battery of the smart thru axle on page 39.



3. Wake up the ringshifter by shifting once and then waiting 3 seconds.  
The vibration-sensitive smart thru axle will start up automatically when the bicycle moves.

## 9. operation

### 9.1 Operation

Please refer to the bicycle manufacturer's manual or the user manual for the Classified compatible shifter or satellite button.

## 10. Maintenance

### 10.1 Maintenance schedule


**NOTE**

The indicated frequency depends on the use of the Classified Powershift hub and the riding conditions.

Action	Frequency	Execution
Inspection	Before riding	Please refer to Checking the Powershift hub on page 35
Cleaning	After riding	Please refer to Cleaning the Classified Powershift hub on page 40
Lubrication (*)	After riding	<ol style="list-style-type: none"> <li>1. Clean the chain with a degreaser.</li> <li>2. Dry the chain with a dry cloth.</li> <li>3. Lubricate the chain.</li> </ol>


**NOTE**

(\*) Lubrication is not needed for bicycles with a belt drive!

### 10.2 Checking the Powershift hub

Perform this check each time before you ride the bicycle!


**WARNING**

If you notice any issues, please contact Classified.

1. Check the status of the batteries. Please refer to Check the battery status of the thru axle on page 35.
2. Check the Bluetooth® connection. Please refer to Bluetooth® pairing (dropbar handlebar unit) on page 30.

### 10.3 Tools required

- Lock ring tool
- Torx T5 screwdriver
- Flat-head screwdriver
- Torque wrench
- Chain whip or sprocket remover

### 10.4 Check the battery status of the thru axle

The handlebar unit and the smart thru axle are both equipped with an LED. The color of the LED indicates the battery status. You can check the colour of the LEDs while shifting. However, for safety it is recommended to get off the bicycle and perform the following procedure.



Fig. 14: Buttons and LEDs

- 1. Get off the bicycle to perform this procedure.
- 2. Perform one of the following actions:
  - Press and hold the button (1) on the dropbar handlebar unit for less than 2 seconds.
  - Briefly push the ringshifter (2) up or down.
  - Press and hold the button (3) on the smart thru axle for less than 2 seconds.
- 3. Observe the color of the LED (4) on the smart thru axle.

Color of the LED on the smart thru axle	Smart thru axle battery status
Green	The battery status is OK.
Blinking red	Recharge the battery of the smart thru axle.

10.5 Check the battery status of the dropbar handlebar unit

The dropbar handlebar unit is equipped with an LED. The color of the LED indicates the battery status. You can check the colour of the LEDs while shifting. However, for safety it is recommended to get off the bicycle and perform the following procedure.



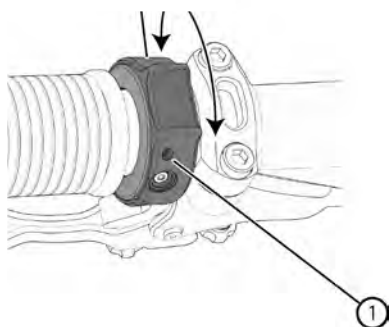
Fig. 15: Buttons and LEDs

- 1. Get off the bicycle to perform this procedure.
- 2. Press and hold the button (1) on the dropbar handlebar unit for less than 2 seconds.
- 3. Observe the color of the LED (2) on the dropbar handlebar unit.

LED color on the dropbar handlebar unit	Battery status of dropbar handlebar unit
Green, blinking at 2 pulses per second for 3 seconds	The battery is at more than 30% charge.
Red, blinking at 2 pulses per second for 3 seconds	The battery is at more than 20% but less than 30% charge.
Red, blinking at 5 pulses per second for 3 seconds	The battery is at more than 10% but less than 20% charge.  Replace the battery of the dropbar handlebar unit. Please refer to Replacing the battery of the dropbar handlebar unit on page 37.

## 10.6 Check the battery status of the ringshifter

The ringshifter is equipped with an LED. The color of the LED indicates the battery status. You can check the colour of the LEDs while shifting. However, for safety it is recommended to get off the bicycle and perform the following procedure.



1. Push the ringshifter (2) up or down very briefly (for less than 0.3 seconds).
2. Observe the color of the LED (1):

LED colour	Battery status
Green, for 0.2 seconds	The battery is at more than 25% charge.
Red, for 0.2 seconds	The battery is between 15% and 25% charge
Red, blinking for 1.5 seconds	The battery is at less than 15% charge.
No color	The battery is completely flat.

## 10.7 Replacing the battery of the dropbar handlebar unit

You can replace the dropbar handlebar unit's button cell battery without removing the tape from your handlebar.

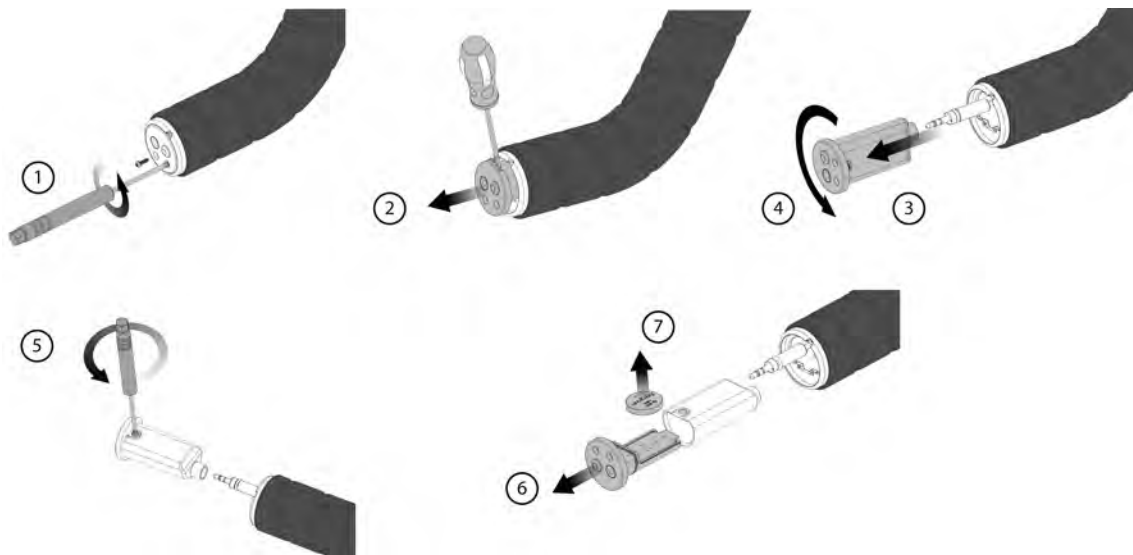


Fig. 16: Replacing the battery of the dropbar handlebar unit

1. Loosen the two Torx T5 screws on the dropbar handlebar unit.
2. Pry the handlebar unit from the dropbar handlebar unit using a flat-head screwdriver.  
If required, you can lightly squeeze the edges of the holder in the handlebar to facilitate removing the dropbar handlebar unit.
3. Fully remove the dropbar handlebar unit from the handlebar and disconnect the handlebar unit's connector.
4. Turn the dropbar handlebar unit around.
5. Disconnect the housing using the Torx T5 screwdriver.
6. Slide the battery holder out of the housing.
7. Remove the CR1632 button cell battery while fixating the electronics in its holder.
8. Install the new CR1632 button cell battery.  
Place the battery correctly. Observe the + and - markings.
9. Reinstall all parts in the reverse order of removal. Pay special attention to the following:
  - Ensure that the rubber seal between the battery holder and the housing is installed correctly in the groove.
  - Install the connector fully up against the handlebar unit. Before continuing the installation, check that the LED blinks both when shifting up and when shifting down.



**NOTE**

*Do not dispose of the battery in general waste! Take the discharged battery to an authorised collection point.*

## 10.8 Recharging the battery of the ringshifter

You cannot replace the battery of the ringshifter, but you can recharge the battery.



**NOTE**

*During recharging, the ringshifter must be dry, and the unit must be recharged in a dry place.*

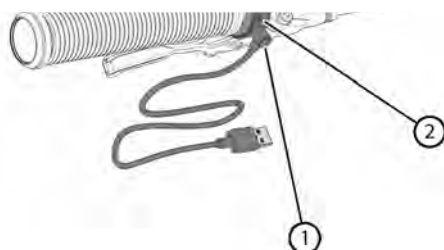


Fig. 17: Recharging the battery of the Oatbar handlebar unit

1. Insert the pogo connector in the opening (1) of the ringshifter (3).
2. Connect the USB charger to the power mains.

The LED (2) will blink green while charging. Once the battery is fully charged, the LED will remain steady green.



#### WARNING

Only use USB chargers that are compliant with IEC/UL 60950-1 or IEC/UL 62368-1 standards.

3. Disconnect the pogo connector from the ringshifter
4. Remove the USB charger from the power mains.

## 10.9 Recharging the battery of the smart thru axle

The battery in the smart thru axle cannot be replaced, but it can be recharged. You can use a fully charged battery for 3 to 6 months, depending on usage. The more you ride and the more you shift, the sooner the battery will need to be recharged. If the Classified Powershift hub is exposed to vibrations during extended transport, the battery will discharge more quickly.

Recharging takes about 4 hours at room temperature.



#### CAUTION

NEVER recharge the battery of the smart thru axle while riding. If you do so, the smart thru axle will no longer be dust and water tight.



#### NOTE

During recharging, the smart thru axle must be dry, and the unit must be recharged in a dry place.

A

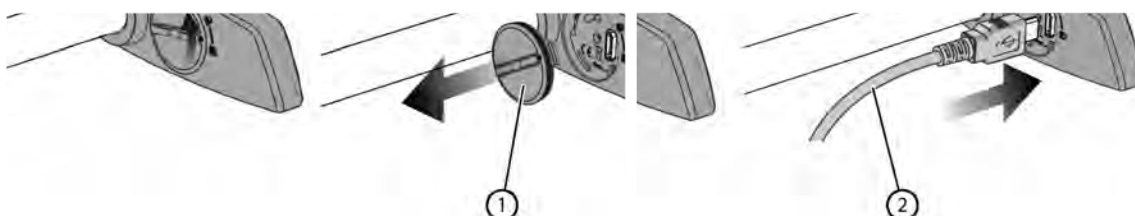


Fig. 18: Recharging the battery of the smart thru axle

1. Remove the smart thru axle.
2. Turn the bayonet lock counter-clockwise past the release sign (A).

3. Remove the bayonet lock (1) from the thru axle lever. (B)
4. Connect the USB cable (2). (C)  
Only use the supplied USB cable.
5. Connect the other end of the cable to a 5V USB charger.  
The LED (3) will blink green while charging and remain steady green when the battery is fully charged.
6. After fully charging the battery, remove the cable and reinstall the bayonet lock correctly.

**WARNING**

*Not reinstalling the bayonet lock correctly will result in damage to the smart thru axle from moisture and dust.*

## 10.10 Cleaning the Classified Powershift hub

Do not use scouring pads, abrasive cleaners, aggressive solutions (such as thinners) or alkaline or acidic solvents (such as rust removers).

Regular cleaning will extend the life of the Classified Powershift hub!

Clean the Classified Powershift hub using a mild soap solution and a NON-powerful water jet.

**CAUTION**

*Do NOT use a pressure washer or steam washer!*

## 10.11 Troubleshooting

### Troubleshooting dropbar handlebar unit

Issue	Cause	Solution
The LED on the dropbar handlebar unit does not blink after a shifting command.	The battery of the dropbar handlebar unit is flat.	Check the battery status – please refer to Check the battery status of the thru axle on page 35. If necessary, replace the battery of the dropbar handlebar unit – please refer to Replacing the battery of the dropbar handlebar unit on page 37.
The LED on the dropbar handlebar unit blinks red after a shifting command.	The battery of the dropbar handlebar unit is flat.	Replace the battery of the dropbar handlebar unit – please refer to Replacing the battery of the dropbar handlebar unit on page 37.
The LED on the dropbar handlebar unit only blinks when shifting up, but not when shifting down, or vice versa.	The connector of the shifter or the satellite buttons is installed incorrectly into the dropbar handlebar unit.	Remove the dropbar handlebar unit from the handlebar and make sure the connector is installed into the dropbar handlebar unit up to the stop.



## Troubleshooting ringshifter

Issue	Cause	Solution
The LED on the ringshifter does not blink after a shifting command.	The battery of the ringshifter is flat.	Check the battery status – please refer to Check the battery status of the thru axle on page 35. Recharge the battery of the ringshifter – please refer to Recharging the battery of the ringshifter on page 38.
The LED on the ringshifter blinks red after a shifting command.	The battery of the ringshifter is flat.	Recharge the battery of the ringshifter – please refer to Recharging the battery of the ringshifter on page 38.

## Troubleshooting smart thru axle

Issue	Cause	Solution
The LED of the smart thru axle does not blink after a shifting command.	The battery of the smart thru axle is flat.	Recharge the battery of the smart thru axle – please refer to Recharging the battery of the smart thru axle on page 39.
	The handlebar unit and the smart thru axle are not paired through Bluetooth®.	Pair the handlebar unit and the smart thru axle through Bluetooth® – please refer to Bluetooth® pairing (dropbar handlebar unit) on page 30.
The LED of the smart thru axle blinks red after a shifting command.	The battery of the smart thru axle is nearly flat.	Recharge the battery of the smart thru axle – please refer to Recharging the battery of the smart thru axle on page 39.
The LED of the smart thru axle shows steady green after a shifting command.	There is an error in the wireless energy transfer of the smart thru axle.	Unscrew the smart thru axle from the bicycle until the green LED of the smart thru axle goes off. Then reinstall the smart thru axle.  Important: never issue a shifting command while installing or removing the smart thru axle.
The bayonet lock is no longer installed on the smart thru axle.		Spare parts are available through the website. Please refer to classified-cycling.cc.  Using the bicycle without the bayonet lock on the smart thru axle is not allowed and may cause permanent damage to the system.

## Troubleshooting Classified Powershift hub

Issue	Cause	Solution
Play on the Classified Powershift hub	The smart thru axle is not sufficiently tightened.	Screw the smart thru axle finger-tight into the frame.
	The hubshell lock ring is not sufficiently tightened.	Ensure that the hubshell lock ring has been tightened to 35 Nm.
	One of the end caps is not installed, or installed incorrectly.	Ensure that both end caps (brake side and cassette side) have been installed on the Classified Powershift hub.
	There is play on the bearings of the Classified Powershift hub.	Contact Classified Cycling or a registered Classified dealer.
The Classified Powershift hub will not turn when riding with stationary pedals.	The hubshell lock ring is not installed, or installed incorrectly.	Remove the Classified Powershift hub from the wheel and ensure that the hubshell lock ring has been installed correctly.
The Powershift hub produces an abnormal or continuous noise.		Contact Classified Cycling or a registered Classified dealer.

## Troubleshooting cassette

Issue	Cause	Solution
There is play on the cassette or the cassette wobbles.	The plastic center washer has not been installed in the cassette.	Remove the cassette and ensure that the plastic center washer is installed in the cassette (black plastic washer on the inside of the smallest cassette sprocket). If you have previously swapped out the cassette, also ensure that only one cassette center washer was installed.
	The cassette lock ring is not sufficiently tightened.	Ensure that the cassette lock ring is tightened to 40 Nm.
The cassette does not shift well.	The rear derailleur has not been adjusted correctly.	Consult the rear derailleur's manual for adjusting the derailleur to the cassette. When changing the cassette size (e.g. from a 11-34 to a 11-27 cassette), it is important to adjust the derailleur's "B screw" correctly.
	An incompatible chain has been installed.	Please refer to <a href="http://classified-cycling.cc">classified-cycling.cc</a> for the compatible chain types

Issue	Cause	Solution
	The chain is worn out.	Please refer to <a href="http://classified-cycling.cc">classified-cycling.cc</a> for the compatible chain types and install a new chain.
	The cassette is worn out.	Spare parts are available through the website. Please refer to <a href="http://classified-cycling.cc">classified-cycling.cc</a>
The wheel is jammed in the frame and will not turn anymore.	The cassette-side end cap has not been installed.	Install the cassette-side end cap.
	The chain is jammed between the cassette and the frame.	Remove the wheel and reinstall the wheel after placing the chain back around the cassette.

**NOTE**

*For the most recent list of frequently asked questions, please refer to [classified-cycling.cc](http://classified-cycling.cc).*

## 11. Recycling

### 11.1 Recycling the Classified Powershift hub

Remove the handlebar unit from the handlebar and disassemble the various components:

- Smart thru axle
- Hubshell
- Powershift hub
- Cassette

Do NOT dispose of the products in your general household waste! Comply with the current local legal requirements and contact your local authorities in case of any doubt.

The smart thru axle contains a non-replaceable rechargeable battery. This battery may only be removed by a qualified professional.

The ringshifter contains a non-replaceable rechargeable battery. This battery may only be removed by a qualified professional.

The dropbar handlebar unit contains a non-replaceable rechargeable battery. Remove this battery and only submit the discharged battery to an authorised collection point.



## 12. Appendices

### 12.1 Warranty



#### **NOTE**

*The warranty is valid only for registered products and providing the service suggestions are followed.*

In case of prohibited use, the warranty will be void. Please refer to Prohibited use on page 6.

Register by scanning the components' QR codes or visit [classified-cycling.cc/registration](http://classified-cycling.cc/registration)

For support, please contact Classified Cycling at [support@classified-cycling.cc](mailto:support@classified-cycling.cc)

### 12.2 EC Declaration

Classified Cycling hereby declares that the radio equipment in the thru axle and the handlebar unit are in conformity with Directive 2014/53/EU. The full text of the EU declaration of conformity is provided on the following web page: [classified-cycling.cc/service/regulatory](http://classified-cycling.cc/service/regulatory)

Both the thru axle and the handlebar unit operate in a frequency range between 2,400-2,480 MHz (BLE and ANT+) and have a maximum signal capacity of 1 mW.

### 12.3 FCC and ISED declaration

#### **FCC Compliance Statement**

This device complies with part 15 of the FCC rules.

Operation is subject to the following two conditions:

1. This device may not cause any harmful interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.



#### **WARNING**

*Changes or modifications not expressly approved by the party responsible for compliance with the rules and standards could void the user's authority to operate the device. This applies in particular to the antenna supplied with the device.*



#### **NOTE**

*This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:*

- Reorient or relocate the receiving antenna.*
- Increase the separation between the equipment and receiver.*
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- Consult the dealer or an experienced radio/TV technician for help.*

Canadian Compliance Statement

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada license-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1) L'appareil ne doit pas produire de brouillage;

2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

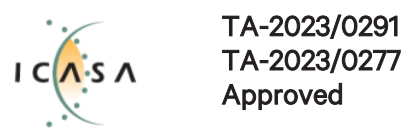
RF exposure

This portable transmitter and its antenna comply with FCC and ISED limits for RF exposure of the general population / uncontrolled exposure.

Overview of certificate numbers

Part	Numbers
Smart thru axle	<ul style="list-style-type: none"><li>FCC ID: 2AZ7ACCLASSIBV1</li><li>IC: 27531-CLASSIBV1</li><li>M/N: 029_047_00</li></ul>
Wireless dropbar handlebar unit	<ul style="list-style-type: none"><li>FCC ID: 2AZ7ACCLASSIAV1</li><li>IC: 27531-CLASSIAV1</li><li>M/N: 029_003_01</li></ul>
Ringshifter	<ul style="list-style-type: none"><li>FCC ID: 2AZ7A-SU210</li><li>IC: 27531-SU210</li><li>M/N: SU210</li></ul>

12.4 ICASA label



12.5 Spare parts

Please refer to [classified-cycling.cc](http://classified-cycling.cc).

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