

# **turboc**

*vado/como*



**ENGLISH - USER MANUAL**



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This manual was drafted in the English language (Original instructions) and may have been translated into other languages as applicable (translation of Original instructions).

EN 15194

## SPECIALIZED BICYCLE COMPONENTS

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0000092459\_UM\_EN\_R1\_09/17

Please note all instructions and notices are subject to change and updates without notice.

Please visit [www.specialized.com](http://www.specialized.com) for periodic tech updates.

Feedback: [techdocs@specialized.com](mailto:techdocs@specialized.com)

# 1. INTRODUCTION

## IMPORTANT:

This user manual is specific to your Specialized Turbo VADO or COMO bicycle (VADO/COMO) and should be read in addition to the Specialized Bicycle Owner's Manual ("Owner's Manual"). It contains important safety, performance and technical information, which you should read before your first ride and keep for reference. You should also read the entire Owner's Manual, because it has additional important general information and instructions which you should follow. If you do not have a copy of the Owner's Manual, you can download it at no cost at [www.specialized.com](http://www.specialized.com), or obtain it from your nearest Authorized Specialized Retailer or Specialized Rider Care.

Additional safety, performance and service information for specific components such as suspension or pedals on your bicycle, or for accessories such as helmets or lights, may also be available. Make sure that your Authorized Specialized Retailer has given you all the manufacturers' literature that was included with your bicycle or accessories. In case of a conflict between the information in this user manual and information provided by a component manufacturer, please contact your nearest Authorized Specialized Retailer.

Depending on the model, the VADO/COMO is either an EPAC (Electrically Pedal Assisted Cycle, otherwise known as a Pedelec) or L1e-B S-Pedelec (Speed Pedelec), and is referred to in this manual as a bicycle unless otherwise noted.

ADDITIONAL LANGUAGES ARE AVAILABLE FOR DOWNLOAD AT [www.specialized.com](http://www.specialized.com).

When reading this user manual, you will note various important symbols and warnings, which are explained below:



**WARNING!** The combination of this symbol and word indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death. Many of the Warnings say "you may lose control and fall." Because any fall can result in serious injury or even death, we do not always repeat the warning of possible injury or death.



**CAUTION:** The combination of the safety alert symbol and the word CAUTION indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury, or is an alert against unsafe practices.

The word CAUTION used without the safety alert symbol indicates a situation which, if not avoided, could result in serious damage to the bicycle or the voiding of your warranty.



**INFO:** This symbol alerts the reader to information which is particularly important.



**TECH TIP:** Tech Tips are useful tips and tricks regarding installation and use.



**GREASE:** This symbol means that high quality grease should be applied as illustrated.



**CARBON FRICTION PASTE:** This symbol means that carbon friction paste should be applied as illustrated to increase friction.

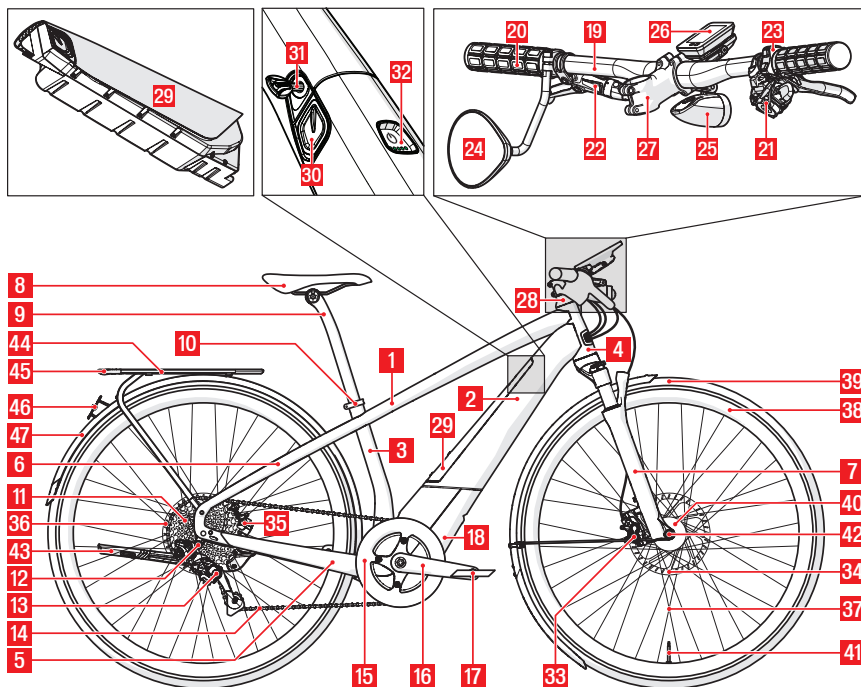


**TORQUE:** This symbol highlights the correct torque value for a specific bolt. In order to achieve the specified torque value, a quality torque wrench must be used.

## 1.1. WARRANTY

Please refer to the written warranty provisions provided with your bicycle, or visit [www.specialized.com](http://www.specialized.com). A copy is also available at your Authorized Specialized Retailer.

## 2. VADO/COMO COMPONENTS



1. Top tube	17. Pedal	33. Front brake caliper
2. Down tube	18. Motor	34. Front brake rotor
3. Seat tube	19. Handlebar	35. Rear brake caliper
4. Head tube	20. Grip	36. Rear brake rotor
5. Chainstay	21. Shifter	37. Spoke
6. Seatstay	22. Brake lever	38. Rim
7. Fork	23. Remote*	39. Tire
8. Saddle	24. Mirror*,**	40. Hub
9. Seatpost	25. Headlight**	41. Valve
10. Seatpost clamp	26. Display	42. Thru-axle
11. Cassette	27. Stem	43. Kickstand
12. Derailleur hanger	28. Headset	44. Rear rack**
13. Rear derailleur	29. Battery	45. Taillight**
14. Chain	30. Charging socket	46. License plate**
15. Chaining	31. Lock	47. Fender
16. Crank arm	32. Power switch	

\* The inclusion of a mirror and location of the mirror and remote can vary depending on the country and bike spec.

\*\* Not all models have a license plate, mirror, rear rack, headlights and/or saddle or rack mounted taillights.

## 3. GENERAL INFORMATION ABOUT YOUR VADO/COMO

### 3.1. INTENDED USE

The VADO/COMO is intended and tested for General Purpose Riding (Condition 2) use only. For more information on intended use and structural weight limits for the frame and components, please refer to the Owner's Manual.

The VADO/COMO is classified either as a Pedelec/EPAC or an S-Pedelec. Regardless of its classification, it will provide motor support only while pedaling. Depending on the classification, there can be different requirements and regulations affecting your use of the bicycle.



Before using your VADO/COMO bicycle, please inform yourself of all applicable legal requirements and regulations in your country or state. There may be restrictions on riding your VADO/COMO bicycles on public roads, cycling paths, and/or trails. There may also be applicable helmet requirements, age restrictions or license or insurance requirements. Specialized does not, and will not, make any promise, representation, or warranty regarding the use of your VADO/COMO bicycle. As laws and regulations regarding electric bicycles vary by country and/or state and are constantly changing, please make sure to obtain the latest information. You should also regularly see your Authorized Specialized Retailer for updated information.

**CAUTION:** All VADO/COMO bicycles have a fixed pre-set speed limit at which the motor support will automatically shut off. Any (attempted) tampering with the power output and/or system is prohibited and will void the warranty.

### 3.2. PEDELEC / EPAC

If your VADO/COMO is classified as a Pedelec, your motor support will automatically switch off when you reach a maximum speed of 25 km/h (15.5 mph) or 20 mph in the US. A driver's license or insurance is typically not required.

### 3.3. L1e-B S-PEDELEC (SPEED PEDELEC)

If your VADO/COMO is classified as an S-Pedelec, your motor support will automatically switch off when you reach a maximum speed of 45 km/h (28 mph). A driver's license or insurance may be required.

In many countries, S-Pedelecs are considered motor vehicles and may require an operating license and insurance. There may also be requirements for tire tread depth, use of rear view mirrors, license plates, head and tail lights.

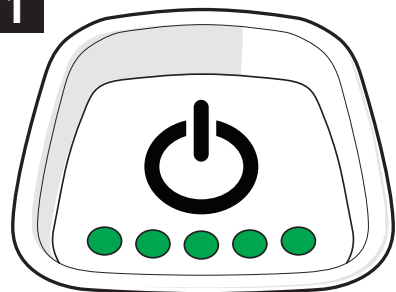


Horn, license plate, mirror and headlight / taillight spec may vary depending on the bike model and country requirements.

### 3.4. STARTING THE SYSTEM

- To start the system, press and hold the power button (fig.1) located on the top of the battery, until the LEDs glow green. The number of LEDs that glow green will depend on the level of charge in the battery.
- To turn the battery (and support) off again, press and hold the power button until the LEDs turn off.

1



## 4. GENERAL NOTES ABOUT ASSEMBLY

This user manual is not intended as a comprehensive use, service, repair or maintenance guide. Please see your Authorized Specialized Retailer for all service, repairs or maintenance. Your Authorized Specialized Retailer may also be able to refer you to classes, clinics or books on bicycle use, service, repair, and maintenance.



**WARNING!** Due to the complexity of the VADO/COMO bicycle, proper assembly requires a high degree of mechanical expertise, skill, training and specialty tools. Therefore, it is essential for your safety that the assembly, maintenance and troubleshooting be performed by an Authorized Specialized Retailer. Before your first ride, make sure your components, such as brakes and drivetrain, are assembled and adjusted in accordance with the manufacturer's instructions and are functioning properly



**WARNING!** Many components on the VADO/COMO, including, but not limited to the motor, battery and cable guides, are proprietary to the VADO/COMO. Only use originally supplied components and hardware at all times. Use of other components or hardware will compromise the integrity and strength of the assembly. VADO/COMO specific components should only be used on the VADO/COMO and not on other bicycles, even if they fit. Failure to follow this warning could result in serious injury or death.



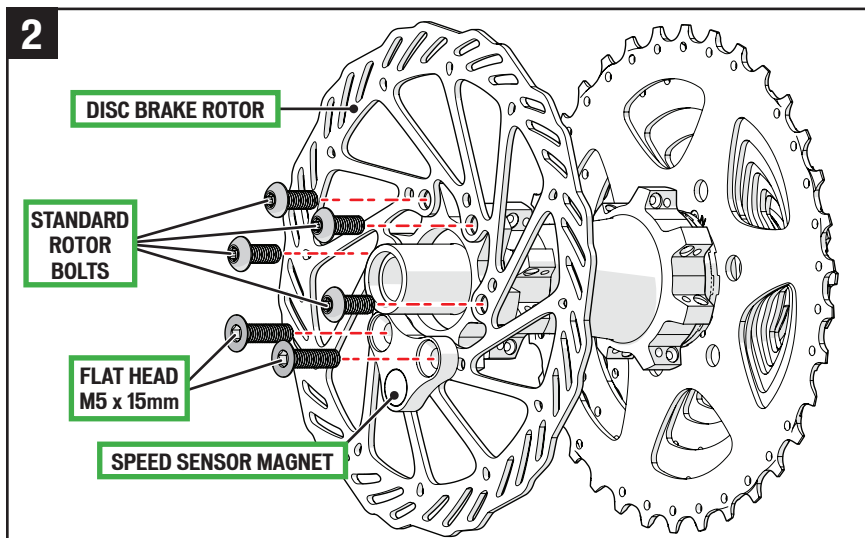
**WARNING!** Never modify your frame or bicycle in any way. Do not sand, drill, file or remove parts from your bicycle. Do not install incompatible components or hardware. Failure to follow this warning may result in serious personal injury or death.



**WARNING!** Electrical components can be exposed when working on your bicycle. Do not touch any part of the electrical system while under electric charge. Do not expose the connections of the battery and frame to water. If any live components or the battery are damaged, stop riding immediately and bring your bicycle to your Authorized Specialized Retailer.

### 4.1. SPEED SENSOR

When assembling the rear brake disc, the Speed Sensor Magnet must be installed on the rotor (**fig.2**). Four of the six bolts are standard rotor bolts. The remaining two bolts (M5 x 0.8 pitch x 15mm length, with countersunk flat head) attach the Speed Sensor Magnet to the rotor.



### 4.2. BOTTOM BRACKET

The bottom bracket is an integrated part of the motor, and does not require any pre-installation preparation.

### 4.3. HEADSET

- The headset uses a 1 1/8" (41.8mm x 30.5 x 8mm, 45x45°) Campagnolo Standard compatible upper bearing and a 1.5" (52mm x 40 x 7mm, 45x45°) lower bearing. Ensure that replacement bearings are compatible with the Specialized headset specification. No tools are needed for installation or removal of both bearings. Grease

bearing surfaces before installation.

- Inspect the fork, stem, seatpost and seat tube, to ensure that there are no burrs or sharp edges. Remove any burrs or sharp edges using fine grit sandpaper.
- All edges of the stem in contact with the steerer tube should be rounded out to eliminate any stress points.



**WARNING!** Burrs and sharp edges can damage the carbon and alloy surfaces of the components. Any deep scratches or gouges in the stem or fork can weaken the components.

#### 4.4. SEATPOST

VADO/COMO frames have a 30.9mm seatpost diameter and require that the seatpost have a tolerance of 30.78mm to 30.95mm.

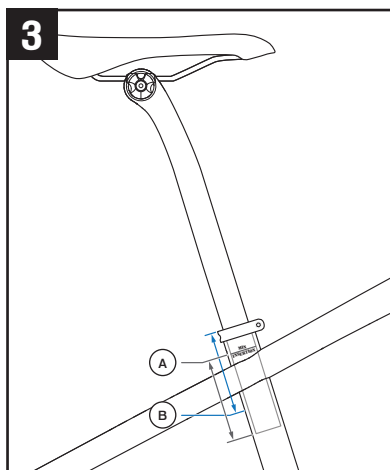
##### SEATPOST MINIMUM INSERTION:

To prevent damage to the frame and/or seatpost, it is important to have a minimum amount of seatpost insertion in the seat tube. This minimum insertion must meet the following requirements:

- The seatpost must be inserted into the frame deep enough so the minimum insertion/maximum extension (min/max) mark on the seatpost is not visible (**fig.3 A**).
- The seatpost must also be inserted into the seat tube deep enough to be visible through the sight hole (**fig.3 B**), or if no sight hole is present, the insertion must meet or exceed the minimum measured insertion depth (**fig.3 B**) required by the size of the frame (see below).
- If the seatpost and frame minimum insertion requirements differ from each other, always use the longer minimum insertion. For example, if the frame requires 90mm, but the seatpost requires 100mm, then 100mm is the minimum insertion required.

- **All VADO/COMO MODELS:** Minimum insertion 90mm

If the seatpost is at the min/max mark and the seatpost is not visible through the sight hole or does not meet or exceed the minimum measured insertion depth of the frame, the seatpost is not inserted deeply enough into the seat tube and should be lowered until it can be seen through the sight hole. This may result in the saddle being too low. If so, the seatpost must be replaced with a longer seatpost.



**WARNING!** Failure to follow the seatpost and frame minimum insertion requirements may result in damage to the frame and/or seatpost, which could cause you to lose control and fall.

If the seatpost is cut short, the min/max mark on the seatpost may no longer be accurate. Before cutting the seatpost, note the min/max depth required by the seatpost manufacturer.



**WARNING!** For general instructions regarding the installation of the seatpost, refer to the appropriate section in the Owner's Manual. Riding with an improperly tightened seatpost can allow the saddle to turn or move and cause you to lose control and fall.

**CAUTION:** Inspect the seatpost and seat tube to ensure that there are no burrs or sharp edges. Remove any burrs or sharp edges using fine grit sandpaper.

#### 4.5. REPLACEMENT PARTS AND ACCESSORIES

Specialized replacement parts and accessories are available through your Authorized Specialized Retailer.

## 5. GENERAL NOTES ABOUT RIDING

The VADO/COMO motor provides pedal assistance only while you are pedaling and the bicycle is in motion. The amount of pedal assistance will be higher or lower depending on the amount of force applied to the pedals. If you stop pedaling, the motor will stop providing any assistance.

The VADO/COMO bicycle can also be ridden as a normal bicycle without motor assistance by switching the display to the OFF mode. The same applies if the battery charge drops below 10%.

The VADO/COMO bicycle has a walk-assist mode (the motor engages without pedal force being applied) which is designed to provide assistance when walking the bicycle up a hill, up to a speed of 6 km/h (3.7 mph), so long as the + button is pressed down.

### 5.1. RIDING TIPS

Because of the electric motor assist, the VADO/COMO offers a unique ride compared to a bicycle without motor assist. Below are some riding tips which may also reduce component wear and increase battery range:

- Pay attention to your speed going into a corner and be sure to stop pedaling well before entering the corner. Otherwise you may carry too much speed as you enter the corner.
- Ride efficiently and look ahead. Any time braking force is applied, more energy is needed to get the bicycle back up to speed.
- Shift gears regularly to stay in an optimal cadence range and downshift before coming to a stop.
- Reduce pedal force before initiating a gear shift to reduce drivetrain wear.
- Check the tire pressure regularly. Low pressure can cause the tires to roll inefficiently.
- If your bicycle is exposed to cooler weather, keep the battery stored indoors until just before riding.
- Do not expose your bicycle to prolonged excessive heat (e.g. direct sunlight).
- Only carry the cargo you need. More cargo weight requires more energy to move.



**WARNING!** The motor support is activated as soon as you step onto the pedals and the bicycle is in motion. You should be seated on the bicycle and engage at least one brake before starting to pedal. Do not put one foot on a pedal and throw a leg over the bicycle, as it could accelerate unexpectedly. Failure to follow this warning may result in serious personal injury or even death.



**WARNING!** The acceleration of an electric bicycle can be faster than anticipated and may feel unusual at first. Before your first ride, you should use the lowest power ECO mode and become familiar with the operation of the electric bicycle by practicing starting and stopping, cornering and navigating obstacles in a safe environment away from other bicycles, pedestrians and/or vehicles. Due to the greater acceleration of an electric bicycle, you should also pay particular attention to terrain conditions as you may approach obstacles faster than expected. Please note the default motor support mode upon startup is always SPORT mode.



**CAUTION:** The weight of your VADO/COMO is significantly higher than a bicycle without motor support. Use caution when handling the bicycle (including, but not limited to parking, lifting, pushing, loading it into a car or onto a bicycle carrier and unloading it).

**CAUTION:** Do not ride your VADO/COMO without the battery installed. Riding without a battery may damage exposed electrical components.



## 5.2. BEFORE YOUR FIRST RIDE

Regardless of your experience level, you should read the “FIRST” section of your Owner’s Manual (Bike Fit, Safety First, Mechanical Safety Check and First Ride) and carry out all important safety checks. In addition, make sure you are familiar with the following areas of the bicycle that are specific to electric bicycles.

### BEFORE EVERY RIDE

- Battery
  - Are all connections plugged in correctly?
  - Do you have sufficient battery charge?
  - Is the battery properly inserted and locked in the frame?
- Display
  - Is the display functioning correctly?

### BEFORE YOUR FIRST RIDE

- Battery
  - Is the battery fully charged?
- Display
  - Are you familiar with the function of the display features?
- Remote
  - Are you familiar with the function of the buttons on the remote?
  - Do you know how to use the remote to change the motor support level from ECO to SPORT to TURBO?



**WARNING!** If your battery, charger or other component exhibits any signs of damage, do not use the bicycle and immediately bring it to your Authorized Specialized Retailer for inspection.

## 5.3. RIDING WITH KIDS

There are many different setups that allow you to ride with kids. Please look at the Riding Safely section in the Owner’s Manual regarding general information and instructions on child carriers or trailers.

If you regularly ride with kids on your bicycle, your Authorized Specialized Retailer should conduct a periodic safety inspection.



**WARNING!** Specialized bicycles are only designed and tested for use by one person at a time. Carrying a child on your Specialized bicycle is at your own risk. If you choose to install an accessory on your Specialized bicycle such as a trailer, carrier, or trailer cycle, make sure it is compatible and refer to the manufacturer’s instructions and your Authorized Specialized Retailer. You should make sure your bicycle is still safe to ride with the accessory installed. Be sure to not exceed the structural weight limit of the bicycle if you use a trailer, trailer cycle or child carrier. Also make sure not to exceed the maximum cargo weight if you use a child carrier.



**WARNING!** Riding with kids on your bicycle will affect the handling by altering the center of gravity, weight and balance. It may also negatively impact your cornering ability, increase your stopping distance and reduce your ability to slow down and maneuver, especially at higher speeds or down a steep grade. All of this can result in a loss of control, potentially causing serious injury and/or death. You should also become familiar with and practice riding with the accessory in a controlled environment away from traffic.



**WARNING!** Do not attach a child carrier, trailer or similar accessory to a composite or carbon fiber part or component, either directly or indirectly. For example, do not attach a trailer to a rear axle when the rear triangle is made of composite or carbon fiber. Likewise, do not attach a trailer cycle bicycle to a composite or carbon seatpost or a child carrier to a composite or carbon fork. Either may potentially apply unusual forces on your bicycle frame or component which could result in damage and cause a complete failure, with the risk of serious injury or death. If you have previously attached an accessory to a composite or carbon fiber part or component, do not ride until you have had your Authorized Specialized Retailer conduct a careful safety inspection.



Before riding with kids on your bicycle, please inform yourself of all applicable legal requirements and regulations in your country and state. There may be restrictions on riding your bicycle with certain or any accessory(ies). This is especially true for electric and pedal-assist bicycles.

## 6. GENERAL NOTES ABOUT MAINTENANCE

The VADO/COMO is a high performance bicycle. All regular maintenance, troubleshooting, repair and parts replacement must be performed by an Authorized Specialized Retailer. For general information regarding maintenance of your bicycle, please refer to the Owner's Manual. In addition, routinely perform a Mechanical Safety Check before each ride, as described in the Owner's Manual.

- Great care should be taken to not damage carbon fiber or composite material. Any damage may result in a loss of structural integrity, which may result in a catastrophic failure. This damage may or may not be visible in inspection. Before each ride, and after any crash, you should carefully inspect your bicycle for any fraying, gouging, scratches through the paint, chipping, bending, or any other signs of damage. Do not ride if your bicycle shows any of these signs. After any crash, and before you ride any further, take your bicycle to an Authorized Specialized Retailer for a complete inspection.
- While riding, listen for any creaks, as a creak can be a sign of a problem with one or more components. Periodically examine all surfaces in bright sunlight to check for any small hairline cracks or fatigue at stress points, such as welds, seams, holes, and points of contact with other parts. If you hear any creaks, see signs of excessive wear, discover any cracks, no matter how small, or any damage to the bicycle, immediately stop riding the bicycle and have it inspected by your Authorized Specialized Retailer.
- Lifespan and the type and frequency of maintenance depends on many factors, such as use, rider weight, riding conditions and/or impacts. Additionally, the VADO/COMO uses a power-assisted drive system, which means more distance is covered in the same amount of time. Components may be subject to increased wear at different rates, depending on the component. Drivetrain and brake components are especially subject to wear. Periodically have your Authorized Specialized Retailer inspect your bicycle and components.
- Exposure to harsh elements, especially salty air (such as riding near the ocean or in the winter), can result in galvanic corrosion of components such as the crank spindle and bolts, which can accelerate wear and shorten the lifespan. Dirt can also accelerate wear of surfaces and bearings. The surfaces of the bicycle should be cleaned before each ride. The bicycle should also be maintained regularly by an Authorized Specialized Retailer, which means it should be cleaned, inspected for signs of corrosion and/or cracks and lubricated. If you notice any signs of corrosion or cracking on the frame or any component, the affected item must be replaced.
- Regularly clean and lubricate the drivetrain according to the drivetrain manufacturer's instructions.
- Do **not** use a high pressure water spray directly on the bearings. Even water from a garden hose can penetrate bearing seals and crank interfaces, increasing bearing and crank wear. Use a clean, damp cloth and bicycle cleaning agents for cleaning.
- Do **not** expose the bicycle to prolonged direct sunlight or excessive heat, such as inside a car parked in the sun or near a heat source such as a radiator.



**WARNING!** Failure to follow the instructions in this section may result in damage to the components on your bicycle and will void your warranty, but, most importantly, may result in serious personal injury or death. If your bicycle exhibits any signs of damage, do not use it and immediately bring it to your Authorized Specialized Retailer for inspection.



**WARNING!** When placing the frame and/or bicycle in a repair stand, clamp the stand to the seatpost and not the frame. Clamping the frame can cause damage to the frame that may or may not be visible, and you may lose control and fall.



**WARNING!** Always turn off the battery when not in use and/or when working on it.

**CAUTION:** Do not open the motor assembly. The motor assembly is a sealed maintenance-free system. Any work on the motor assembly must be performed by a Specialized Service Center.



Your bicycle should be inspected and serviced by your Authorized Specialized Retailer on a regular basis, depending on use. The first inspection should be performed within 200 km / 120 miles. See detailed service schedule on [page 28](#).

## 7. REPLACING PARTS ON YOUR L1e-B S-PEDELEC

The VADO/COMO bicycle, as originally spec'd, is approved as a Pedelec or an L1e-B S-Pedelec. If you change components on the bicycle, it may no longer be approved by your local regulatory authority. Below is a general summary of components that may affect governmental approval if changed.

Make sure to consult with your local regulatory authority when making any modifications. Refer also to the appropriate section in the Owner's Manual about changing components or adding accessories.

**S-PEDELEC ONLY:** The following parts are type approved and need to carry an e-mark:

LIGHTS	REAR VIEW MIRROR	RETRO REFLECTORS
HORN		

**PEDELEC AND S-PEDELEC:** The following parts must only be replaced with original components:

FRAME	ELECTRIC CONTROLLERS	FENDERS
FORK	ELECTRIC WIRING	BRAKES
MOTOR UNIT	HANDLEBAR REMOTE	BRAKE PADS
BATTERY	DISPLAY	BRAKE HOSES
CHARGER	CRANKSET	
SENSORS	REAR RACK	

The following parts do not require type approval:

CHAINRINGS	BOTTOM BRACKET	STEM
CHAIN	WHEELS	HANDLEBAR
PEDALS (IF NOT WIDER)	HUBS	GRIPS
CASSETTE	TIRES (IF ETRTO IS FOLLOWED)	KICKSTAND
DERAILLEURS	RIM TAPES	SADDLE
SHIFTERS	SPOKES	SEATPOST
SHIFTING CABLES	TUBES	
SHIFTING HOUSINGS	HEADSET	

## 8. SYSTEM INTERFACE

Depending on the model, the VADO is equipped with either an LCD display or a TFT touch-enabled display.

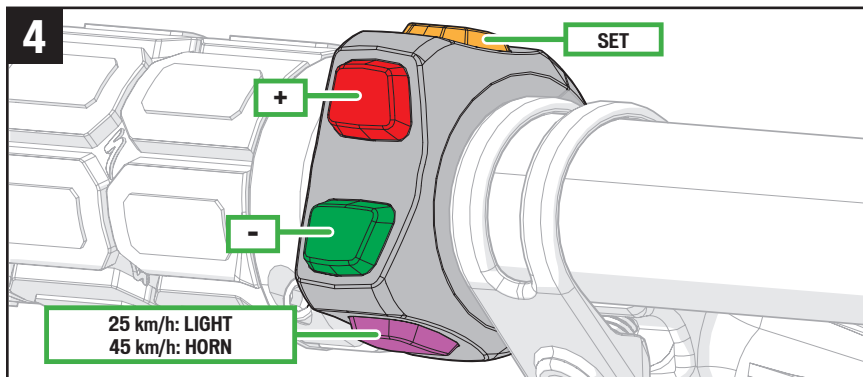
The COMO models are equipped with an LCD display.



**WARNING!** Use caution when viewing or using the display while riding, especially if the touch controls are enabled, as it can be distracting and can lead to accidents. You should always stop before changing settings or operating the various functions of the display.

**45 km/h VADO:** The display must be connected when operating the bike. If it is removed from the mount, the motor will not work.

The handlebar remote (fig.4) controls certain functions of the display and the level of motor support.



- **SET BUTTON:** Allows for the user to toggle through the functions (trip distance, available range, ride time and odometer). Also allows for the clock and unit (metric/imperial) to be adjusted.
- **+ BUTTON:** Increases the amount of support. Pressing and holding activates the walk-assist mode.
- **- BUTTON:** Decreases the amount of support.
- **LIGHT/HORN:** Turns the light on/off (25 km/h or 20 MPH USA models) or activates the horn (45 km/h models).



The light/horn spec may vary depending on the bike model and country requirements.

### 8.1. SUPPORT MODES

The VADO/COMO motor support is available in three different drive settings - TURBO, SPORT and ECO.

- **TURBO MODE:** The motor, while pedaling, provides maximum (100%) support.
- **SPORT MODE:** The motor, while pedaling, provides 75% support (default).
- **ECO MODE:** The motor, while pedaling, provides 35% (default).
- **OFF MODE:** The motor will not offer any assistance, but the display and lights will still function.

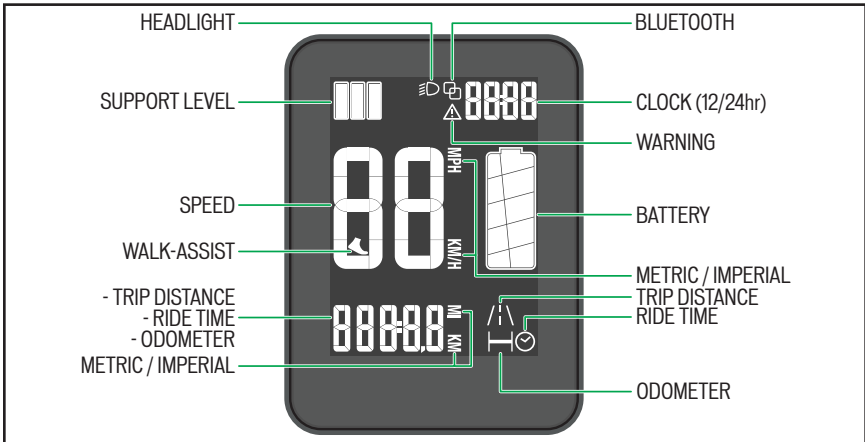
You can change between the different support modes (TURBO, SPORT and ECO) by pressing the +/- buttons on the handlebar remote (fig.4).

To switch into a different support mode, press the + or - button on the remote. After reaching the strongest or weakest mode, the system will not continue to switch. To reduce from TURBO to SPORT to ECO, you have to press the - button. To increase from ECO to SPORT to TURBO, you have to press the + button.

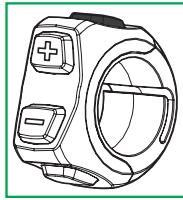


The support modes affect how much support the motor delivers based on your pedaling input. Generally, more support provides faster acceleration and easier climbing at the expense of shorter range and greater chance of wheelspin. Lower power modes that provide less support result in longer battery run times, longer range, and more control in situations where traction is limited. You should experiment with the power settings that work best for your riding style and conditions.

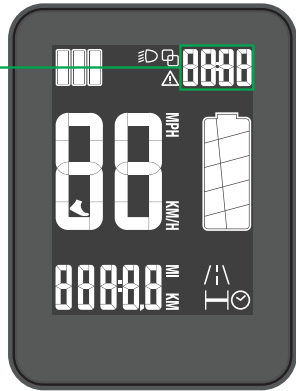
## 8.2. DISPLAY FUNCTIONS (LCD DISPLAY)



### SETTING THE TIME / UNIT



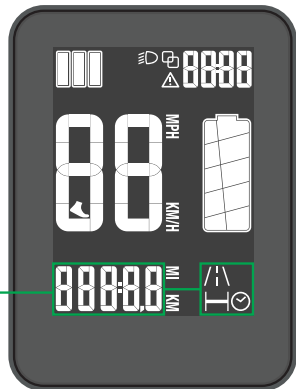
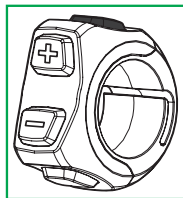
- To set the time, long-press the SET button once. When the time is blinking, press the + and - buttons to adjust the time.
- To set the unit (metric or imperial), long-press the SET button twice, then toggle between the two units to choose miles/12hr or kilometers/24hr.
- To lock in the unit and time, press SET, wait or pedal the bike.



### CHOOSING THE FUNCTION

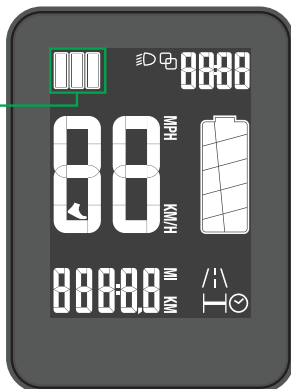
- To toggle between the different functions, press and release the SET button.

- /i\ Trip distance
- H Odometer
- ⌚ Ride time



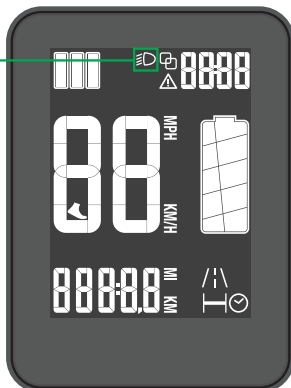
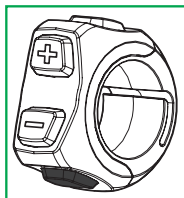
- **NOTE:** The trip related functions automatically reset when the system is shut off, but can be accessed through the app at any time.

### ADJUSTING THE MOTOR SUPPORT



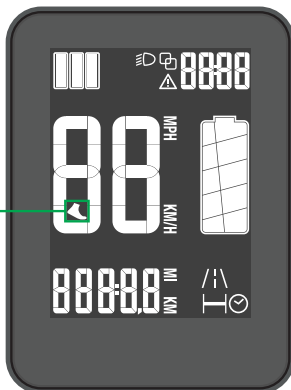
- Press the “+” or “-” button to increase or decrease the level of motor support.

### TURNING THE LIGHT ON AND OFF



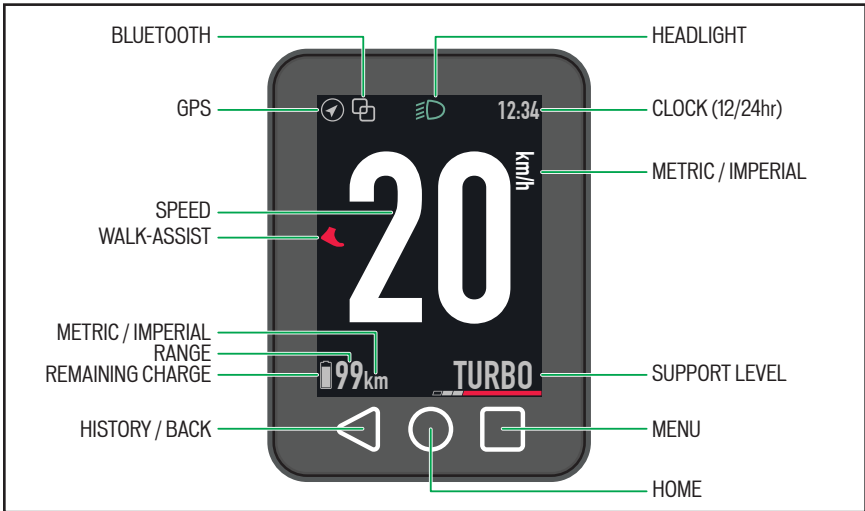
- Press and release the light button to turn the light on or off.

### ACTIVATING THE WALK-ASSIST MODE



- To activate the walk-assist mode, press and hold the “+” button at any time. Once released, the walk-assist will shut off.
- The maximum speed of the walk-assist mode is 6 km/h (3.7 mph).

### 8.3. DISPLAY FUNCTIONS (TFT DISPLAY)



The display is controlled using the buttons on the handlebar remote (fig.4), as well as the three touch buttons below the display and the touch-enabled display itself. The touch screen can be navigated using touch, swipe, pinch and spread gestures.



The TFT display is equipped with a highly adjustable operating system that may improve over time. Make sure you periodically visit your Authorized Specialized Retailer for potential software updates to make sure you have the latest software and features.

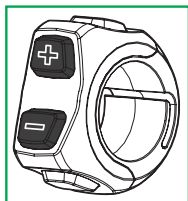
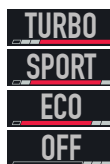
#### SETTING THE TIME / UNIT



The time and unit of measure can be set for 24hr / km/h or 12hr / mph.

- To set the time and unit of measure, press the Menu button and choose the desired function you wish to update.
- The time can also be set automatically with the dealer tool.

## ADJUSTING THE MOTOR SUPPORT



The VADO is equipped with several levels of motor support.

- Press the “+” or “-” button on the remote to increase or decrease the level of motor support.

## POWER SCREEN



In addition to the Home screen information, the Power screen shows:

- A graph illustrating the distribution of power between the rider (left) and motor (right).
- Current rider watt-input and cadence.

## ENVIRONMENT SCREEN



In addition to the Home screen information, the Environment screen shows:

- A graph illustrating the elevation profile for the last 5km (3 miles).
- Current meters or feet climbed.
- Current slope.



## MAP SCREEN



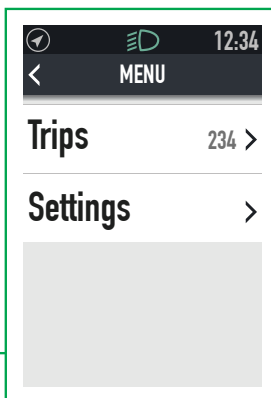
In addition to the Home screen information, the Map screen shows:

- The rider's current position.
- A trace of the distance covered or a planned route.

The rider can interact with the map by:

- Pinching and spreading to zoom in and out.
- Swiping to move the map.
- Change between North-facing and Direction-facing.
- Centering the map (when not centered).

## FUNCTIONS/MENU



The menu, accessed by pressing the square icon below the screen provides access to the following functions:

- Trips: Records trips from when the power is turned on to turned off.
- Settings: Adjusts settings for unit of measure, time, battery display, language.

## TRIP ARCHIVE

Time	Distance	Action
2.4.16 16:45	1,5 km	>
3.4.16 06:32	63,5 km	>
6.4.16 12:02	13 km	>

Saved trips can be accessed in sequential order, based on when the ride took place.

- Trips are started when the bike is powered up and stops when the bike is powered down.
- When accessing an archived trip, a screen similar to the Stop Screen is shown (without battery information).

ARCHIVED TRIP

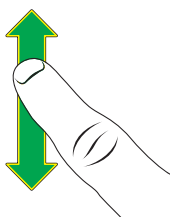
12:34  
27.10.2016

TRIP 40 km TIME 03:30

CLIMB 582 m MAX HEIGHT 1024 m

Ø SPEED 23 km/h MAX SPEED 54 km/h

Delete this trip



A user profile is created when a rider logs in and creates an account by connecting to the bike via a smartphone.

All archived trips are associated to this account. The profile shows the following information:

- Date
- Trip distance
- Ride time
- Route map
- Total elevation gain
- Maximum elevation reached
- Ride profile graph
- Average speed
- Maximum speed

SETTINGS

12:34  
MENU

Touch Control >

Battery >

Units >

Language >

Bike >

The Settings menu provides access to the following functions:

- Touch Control
- Battery
- Units
- Language
- Bike

## TOUCH CONTROL



Always obey the traffic laws and pay attention to traffic.

**Standstill** ✓

**Always**

- Standstill: The setting means touch screen functionality is disabled when riding (default).
- Always: The setting means touch screen functionality is enabled when riding.

## BATTERY



**Battery** 

**Percent** 100 % ✓

The remaining charge of the battery can be displayed as:

- Icon showing a visual of the remaining charge
- Percent of the remaining charge

## UNITS



**Metric** ✓

**Imperial**

km & 24:00

The rider can choose between Metric and Imperial units:

- Km & 24:00hr
- Miles & 12:00hr

**LANGUAGE**

📍 🔦 12:34

< LANGUAGE

---

**English** >

---

**Deutsch** >

---

**Français** >

---

**Español** > The rider can choose between the following languages:

---

**Italiano** >




---

**Nederlands** >

---

- English
- Deutsch
- Español
- Français
- Italiano
- Nederlands

## BIKE

		12:34
	BIKE	
<b>Bike</b>		
Frame ID	WSBC601123456K	
Inspection	123 Days	172 Miles
<b>Usage</b>		
Charging Cycles	28	
Odometer	1886 km	
<b>Software Versions</b>		
BLOKS. OS	1.1	
Motor	4.6	
Battery	2.1	

The BIKE setting displays the following specification information:

- Bike
- Usage
- Software versions.

## SWITCHING OFF

When turning the battery off, the screen will display:

- Battery charge (Icon + %)
- Ride time, percent, consumption
- Time or distance to next inspection, if available or due

NOTE: This information will be displayed for 30 seconds after shut-down.

## 9. BATTERY / CHARGER

Your bicycle is powered by a Lithium-Ion (Li-Ion) battery. Always adhere to the following instructions when handling or charging the battery or when using the VADO/COMO bicycle:

- Only operate the battery between the temperature range of -20° C (-4° F) and +70° C (+158° F).
- Only use the VADO/COMO battery with the VADO/COMO bicycle. Do not use the VADO/COMO battery with any other bicycle or any other battery with the VADO/COMO bicycle, even if it fits.
- Always turn the battery off before connecting or disconnecting the wiring harness or charger to or from the battery.
- Turn off the battery, unplug the charger from the battery and remove the battery from the bicycle before performing work of any kind, such as installation, maintenance, cleaning and/or repair. When transporting or handling the battery separately from the bicycle, ensure the battery is OFF. Touching the contacts when the battery is ON can result in electric shock and/or injury.
- Before riding the bicycle, make sure the battery is properly secured in the frame.

### 9.1. OBSERVE AND OBEY

- Do not modify, open or disassemble the battery or charger. Modification or disassembly may result in a short circuit, fire or malfunction.
- The battery is very heavy. Be careful when handling it and do not drop it.
- Do not allow any nails, screws or other small, sharp and/or metallic objects to come in contact with the battery or the battery's charging socket.
- Do not allow the battery to overheat. Protect the battery from excessive sun exposure.
- Do not expose the battery to an open fire or radiator heat.
- Do not submerge the battery in water.
- Keep the battery away from metal objects as that can cause a short-circuit.
- Do not use a battery that shows any signs of damage to the casing or charging port, or is leaking any fluids. Battery liquid can cause skin irritation and burns. In the event of damage that results in skin or eye contact with any liquid from the battery, immediately flush with water and seek medical assistance.



**WARNING!** Failure to follow the instructions in this section may result in damage to electrical components on your bicycle and will void your warranty, but, most importantly, may result in serious personal injury or death. If your battery or charger exhibits any signs of damage, do not use it and immediately bring it to your Authorized Specialized Retailer for inspection.

### 9.2. CHARGING AND USING THE BATTERY

- Regularly inspect the battery and charger for damage. Never charge a battery which you suspect is damaged or know is broken, and do not use it.
- Make sure the charging socket and plug are dry before connecting and charging the battery.
- Only use the Specialized charger supplied with the bicycle or other chargers approved by Specialized. Inspect the charger before every use for possible damage to the charger itself, the cable or the charging plug. Never use a charger which you suspect is damaged or know is broken.
- Place the charger on a stable, level surface unaffected by heat. If the battery is charged outside of the frame, place the battery on the same surface as the charger.
- You should charge the battery in a dry, well ventilated area and make sure the battery and charger are uncovered during the charging process. Ensure that the battery and charger are not exposed to any flammable or dangerous substances.

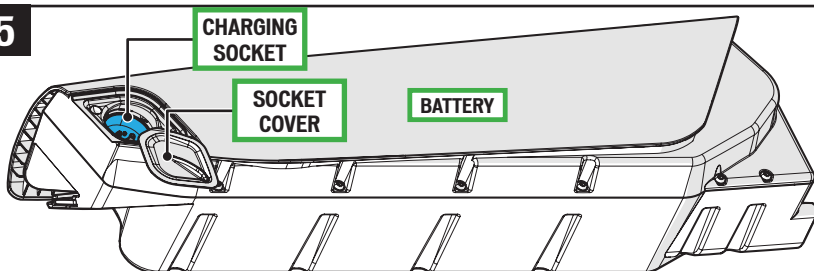


**WARNING!** Failure to follow the instructions in this section may result in damage to electrical components on your bicycle and will void your warranty, but, most importantly, may result in serious personal injury or death. If your battery or charger exhibits any signs of damage, do not use it and immediately bring it to your Authorized Specialized Retailer for inspection.

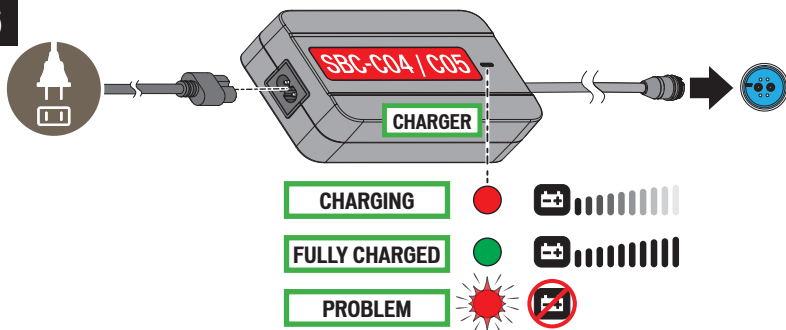


The battery can be charged whether installed in the bicycle or not. Refer to the appropriate instructions regarding removing and installing the battery. Only charge the battery at an ambient temperature between 0° C and +50° C (+32° F and +122° F). If outside temperatures are too hot or too cold, charge the battery inside. For safety reasons, if the battery is too hot, it will not charge.

**5**



**6**



- Plug the charger's plug into an outlet (100 - 240V), using the appropriate plug for the country's standards.
- Uncover the charging socket on the battery, then connect the charging plug with the charging socket on the battery (fig.5). You should charge the battery in an area with a smoke detector.
- When charging is complete, disconnect the charging plug from the battery socket.
- Unplug the charger from the wall socket.

During the charging process, the diode on the charger will glow red (fig.6). When the battery is fully charged, the diode on the charger will turn green.

**CAUTION:** If the red LED flashes during the charging process, a charging error has occurred. In that case, immediately remove the charger from the socket, discontinue use of the motor support and contact your Authorized Specialized Retailer.



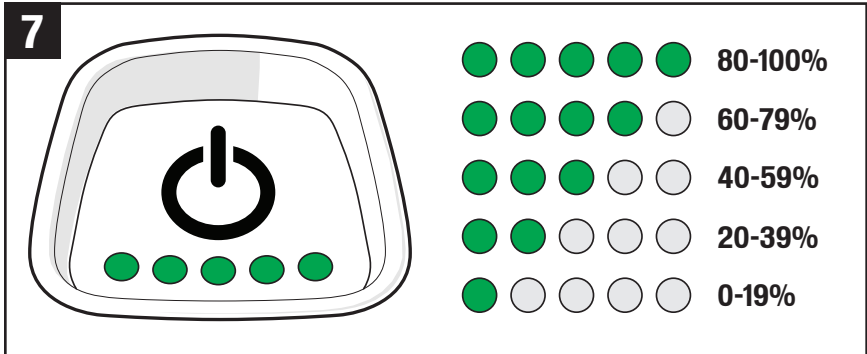
Please note that Li-ion batteries gradually lose capacity depending on age and use. Strongly reduced operating time after charging can be a sign that the battery is reaching the end of its useful life and has to be replaced. Provided the bicycle has been used properly, approximately 75% of the battery's original capacity should remain after 300 charging cycles or two years. Replacement batteries can be purchased from your Authorized Specialized Retailer.

### 9.3. CHARGE LEVEL DISPLAY

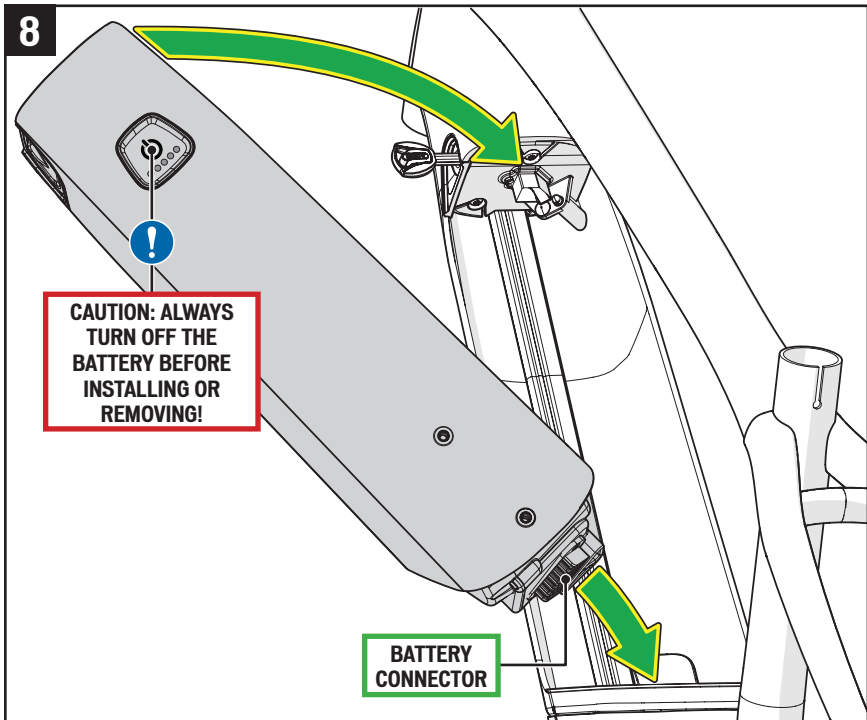
The charge level of the battery is permanently displayed during your ride. The number of LEDs glowing will indicate the remaining battery charge (fig.7).

At 10% battery charge remaining, the system will start to reduce the amount of support. At 1%, the system switches off the motor support.

If your bicycle is at a standstill for at least 10 minutes, the Battery Management System will switch the system off. In order to continue riding with support, you have to switch the system on again.



9.4. INSTALLING THE BATTERY

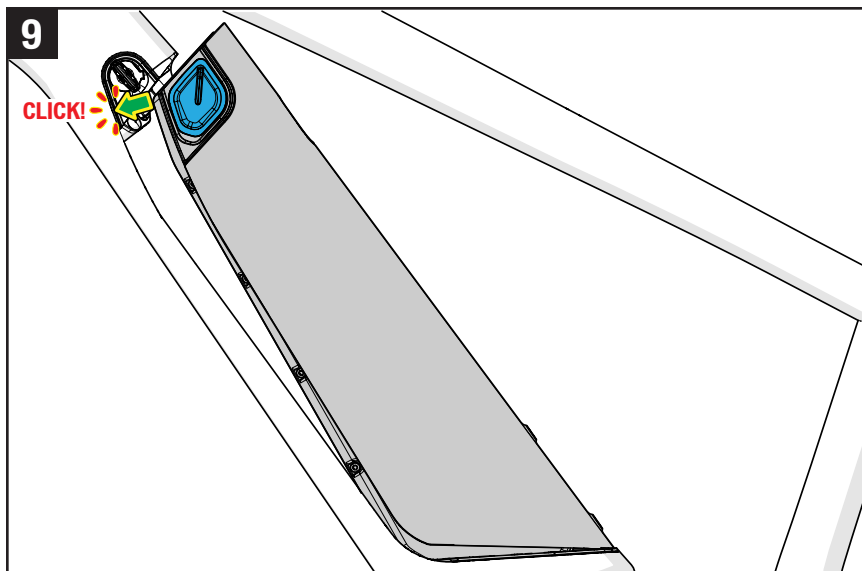


- Lower the bottom edge of the battery into the bottom of the battery cavity (fig.8), then align the top of the battery with the top of the cavity.



The key does not need to be in the lock to install the battery. The battery will lock in place automatically when installed. The key is required only to remove the battery.





- Press down on the battery near the power button until it clicks and engages with the lock (fig.9).

## 9.5. REMOVING THE BATTERY

Reverse the installation steps:

- Turn the key clockwise until the top end of the battery pops up slightly.
- Holding the battery with two hands, lift the battery up slightly at the top, rotate the battery out toward the non-drive-side of the bike then pull it out of the frame.
- Turn the key counter-clockwise to remove the key from the lock.

## 9.6. CLEANING

Always turn the battery off and remove the charger from the battery before cleaning the bicycle. Remove the battery from the bicycle before cleaning the battery.

Always unplug the charger from the battery and the wall socket before cleaning.



**CAUTION:** Never use a high-pressure cleaner when cleaning your VADO/COMO. Instead, use a dry or slightly damp cloth. Please ensure no water comes into contact with the electrical components while washing. Ask your Authorized Specialized Retailer for additional information about cleaning your bicycle.



**CAUTION:** Do not use alcohol, solvents or abrasive cleaners to clean the charger or battery. Instead, use a dry or slightly damp cloth.

## 9.7. STORAGE

**CAUTION:** If the battery is not being used for an extended period of time, remove the battery from the frame and store it in a dry, well ventilated area and leave it uncovered. Only store the battery at an ambient temperature between  $-20^{\circ}\text{C}$  and  $+35^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$  and  $+95^{\circ}\text{F}$ ). If outside temperatures are too hot or too cold, store the battery inside.

**CAUTION:** If the battery is stored and not in use for extended periods of time, be sure to charge the battery at least every three months so at least 2 LEDs (20-39%) are glowing green. If the battery is not charged over a period longer than three months, it can cause damage to the battery.



Do not leave the battery connected to the charger for extended periods after the battery is charged.

## 9.8. BATTERY TECHNICAL DATA

DESCRIPTION	UNIT	SPECIFICATION		
OPERATING VOLTAGE	V	36		
CHARGING TEMPERATURE	°C	0 – +50		
	°F	+32 – +122		
DISCHARGING TEMPERATURE	°C	-20 – +70		
	°F	-4 – +158		
STORAGE TEMPERATURE	°C	-20 – +35		
	°F	-4 – +95		
DEGREE OF PROTECTION		IP67		
WEIGHT	KG	2.7		
	LB	6.0		
BATTERY		SBC-B09	SBC-B10	SBC-B11
RATED CAPACITY		16.8AH	14AH	12.5AH
ENERGY		604WH	504WH	460WH
CHARGE TIME (SBC-C04)		4:35H	3:50H	3:30H
CHARGE TIME (SBC-C05)		9:10H	7:40H	7:00H

## 9.9. CHARGER TECHNICAL DATA

DESCRIPTION	UNIT	SPECIFICATION	
CHARGER MODEL NUMBER		SBC-C04	SBC-C05
CHARGING TEMPERATURE	°C	-10 – +40	0 – +40
	°F	14 – +104	+32 – +104
STORAGE TEMPERATURE	°C	-20 – +65	-20 – +60
	°F	-4 – +149	-4 – +140
OPERATING VOLTAGE	V	42	42
AC INPUT VOLTAGE	V	100 – 240	100 – 240
FREQUENCY	Hz	50 / 60	50 / 60
MAX CHARGE CURRENT	A	4	2
DIMENSIONS	mm	179 X 80 X 37.2	147 X 65.5 X 34.2

The range of the battery can vary considerably depending on the model/capacity of the battery and riding conditions, such as the gradient of your route and the support mode. See "GENERAL NOTES ABOUT RIDING" on [page 6](#) for additional information about battery range and tips on maximizing range.



**WARNING!** Please read the label on the battery (fig.10) supplied with your bicycle before first use.

# 10

TEMPERATURE RANGE	DO NOT	ATTENTION
<p>Storage: -4 to 95°F Charge: 32 to 122°F Ride: -1 to 158°F</p> <p>Specialized Bicycle Components Inc. Rechargeable Li-Ion Battery This battery must be disposed of properly 500-810-1401/504WH/38V Made in R.O.C.</p>	<p>DO NOT handle when damaged DO NOT recharge DO NOT discard in trash DO NOT modify</p>	<p>DO NOT connect +/- DO NOT crush DO NOT puncture DO NOT store in direct sunlight/heat</p>
		<p>Charge at least every 90 days Only use approved Specialized charger</p> <p><b>DANGER</b> NOT FOLLOWING THESE INSTRUCTIONS CAN CAUSE HEAT, FIRE AND EXPLOSION AND CAN RESULT IN SERIOUS INJURY OR DEATH</p>

## 9.10. TRANSPORT



Transporting and/or shipping your VADO/COMO battery may be subject to certain restrictions and may require special handling, labelling, and/or packaging. Be sure to inform yourself beforehand of all applicable legal requirements and regulations in your country or state. Your Authorized Specialized Retailer may also have helpful information available. When carrying the battery outside the frame, you should use an approved battery transport box.



**CAUTION:** Be aware that your VADO/COMO bicycle is significantly heavier than a bicycle without motor support. Use caution when handling, carrying or lifting your VADO/COMO bicycle.

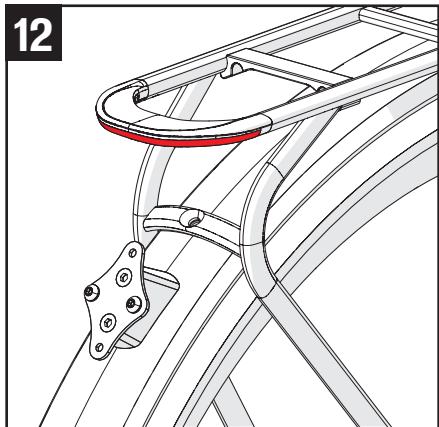
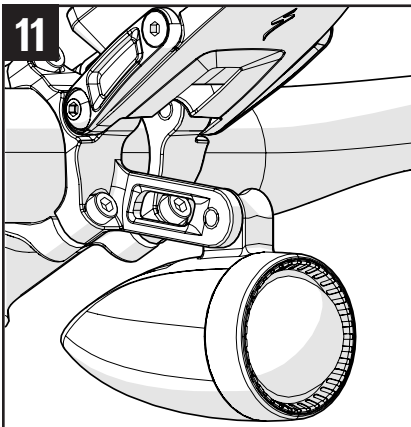
## 9.11. DISPOSAL



Batteries and chargers must not be disposed of in your household trash! All batteries and chargers must be disposed of in an environmentally friendly manner, in accordance with the battery disposal regulations in your country or state. Ask your Authorized Specialized Retailer for information about how to dispose of a battery or charger and any applicable take-back program.

# 10. LIGHTING

Some VADO/COMO models are equipped with an LED headlight and taillight.



The headlight (fig.11) is wired to the battery system and turns on when the bike is turned on.

**RACK-EQUIPPED MODELS:** The taillight (fig.12) is wired through the rack and fender. Removal of the rack and/or fender will result in no longer having a taillight charged and powered by the bicycle's battery.



The headlight and taillight spec may vary depending on the bike model and country requirements. For models equipped with a taillight, it can be located on the rear rack or under the saddle.

# 11. SPECIFICATIONS

## 11.1. BOLT SIZE / TORQUE SPECS



**WARNING!** Correct tightening force on fasteners (nuts, bolts, screws) on your bicycle is important for your safety. If too little force is applied, the fastener may not hold securely. If too much force is applied, the fastener can strip threads, stretch, deform or break. Either way, incorrect tightening force can result in component failure, which can cause you to lose control and fall.

Where indicated, ensure that each bolt is torqued to specification. After your first ride, and consistently thereafter, recheck the tightness of each bolt to ensure secure attachment of the components. The following is a summary of torque specifications in this guide:

LOCATION	IN-LBF	Nm	LOCATION	IN-LBF	Nm
SEAT COLLAR	45	5.1	FRONT AXLE	133	15
SEATPOST @ SADDLE	120	13.5	CRANK BOLTS	443	50
STEM @ STEERER TUBE	52	6.0	CHAINRING BOLTS	89	10*
STEM @ HANDLEBAR	52	6.0	SPIDER LOCKRING	443	50
DERAILLEUR HANGER	35	4	REAR BRAKE GUIDES	6	0.7
REAR AXLE	133	15	WATER BOTTLE BOLTS	25	2.8



**CAUTION:** Ensure all contact surfaces are clean and bolt threads are greased or have a threadlocking compound (refer to the instructions for each bolt) prior to installation.

\* Apply blue loctite to chainring bolts.

## 11.2. FRAME SPECIFICATIONS

ITEM	SPECIFICATION
HEADSET	1 1/8" UPPER / LOWER
SEAT COLLAR DIAMETER	34.9MM
SEATPOST DIAMETER	30.9MM
DERAILLEUR HANGER	S172600003 (AMAZINGER 2.1)
REAR HUB	148MM X 12MM
FRONT HUB (RIGID FORK)	100MM X 12MM
FRONT HUB (SUSPENSION FORK)	100MM X 15MM



**WARNING!** VADO/COMO frames are compatible only with VADO/COMO rigid forks or suspension forks with 50mm maximum fork travel. Use of different forks negatively affect geometry and ride quality, and, most importantly, may result in catastrophic failure of the frame which may result in serious personal injury or death.

## 11.3. RECOMMENDED TIRE PRESSURES

Proper tire pressure is critical for optimal performance. Tires with higher pressure will typically roll faster and provide less rolling resistance, but provide less traction. Tires with lower pressure will typically provide increased traction and control at the expense of rolling resistance.

Use a quality pressure gauge and refer to the tire pressure recommendations written on the side of the tires.



Because of the extra weight of the VADO/COMO, as a rule of thumb, tire pressure should generally be higher compared to a regular bicycle.

## 12. EC - DECLARATION OF CONFORMITY



**The manufacturer:**

Specialized Bicycle Components Inc.  
15130 Concord Circle  
Morgan Hill, CA 95037, USA  
Tel: +1 408 779-6229

hereby confirms for the following products:

**Product description:**

EPAC (Electrically Pedal Assisted Cycle)

**Model designation:**

- Specialized Turbo VADO 2.0
- Specialized Turbo VADO 3.0
- Specialized Turbo VADO 4.0
- Specialized Turbo COMO 2.0
- Specialized Turbo COMO 3.0
- Specialized Turbo COMO 4.0
- Specialized Turbo COMO 5.0

**Year of construction:**

2017

**The conformity with all applicable directives from the guideline:**

Machines (2006/42/EC).

**The machine also conforms to all the directives in the guideline:**

Electromagnetic compatibility (2004/108/EC).

**The following harmonizing norms were applied to the product:**

DIN EN 15194: Bicycles - electrically power assisted cycles - EPAC bicycles.

**Technical documentation by:**

Specialized Europe GmbH  
Werkstattgasse 10  
6330 Cham, Switzerland

Signature:

Jan Talavasek (European Engineering Manager)

Specialized Europe GmbH  
6330 Cham, Switzerland  
Jan 1st, 2017

NOTE: This declaration of conformity applies only to bikes sold in countries following the CE marking directives.

# 13. RETAILER SERVICE SCHEDULE

**1st Inspection:**  
After approx. 200 kilometers (120 miles)

**Work done:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Materials used:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Date:** \_\_\_\_\_  
**Signature:** \_\_\_\_\_  
**Retailer Stamp:**

**2nd Inspection:**  
After approx. 1000 kilometers (600 miles)

**Work done:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Materials used:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Date:** \_\_\_\_\_  
**Signature:** \_\_\_\_\_  
**Retailer Stamp:**

**3rd Inspection:**  
After approx. 2000 kilometers (1200 miles)

**Work done:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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**Materials used:**

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\_\_\_\_\_

**Date:** \_\_\_\_\_  
**Signature:** \_\_\_\_\_  
**Retailer Stamp:**

**4th Inspection:**

**Work done:**

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**Materials used:**

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**Date:** \_\_\_\_\_  
**Signature:** \_\_\_\_\_  
**Retailer Stamp:**

**5th Inspection:**

**Work done:**

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**Materials used:**

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**Date:** \_\_\_\_\_  
**Signature:** \_\_\_\_\_  
**Retailer Stamp:**

**6th Inspection:**

**Work done:**

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**Materials used:**

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\_\_\_\_\_

**Date:** \_\_\_\_\_  
**Signature:** \_\_\_\_\_  
**Retailer Stamp:**

