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TCD-W2
USER MANUAL

ENGLISH



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SPECIALIZED BICYCLE COMPONENTS

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We may occasionally issue updates and addendums to this document. Please periodically check www.specialized.com or contact Rider Care to make sure you have the latest information. Info: specialized.com / 877-808-8154

1. INTRODUCTION

THIS USER MANUAL CONTAINS IMPORTANT INFORMATION. PLEASE READ CAREFULLY AND STORE IN A SAFE PLACE.

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

This user manual is specific to your Specialized Turbo Vado bicycle 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, or obtain it from your nearest Authorized Specialized Retailer or Specialized Rider Care.






Please note all instructions and notices are subject to change and updates without notice. Please visit www.specialized.com for periodic tech updates.

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.

The Vado is classified as an EPAC (Electrically Power Assisted Cycle, otherwise known as a Pedelec), and is referred to in this manual as a bicycle unless otherwise noted.

ADDITIONAL LANGUAGES ARE AVAILABLE FOR DOWNLOAD AT www.specialized.com.

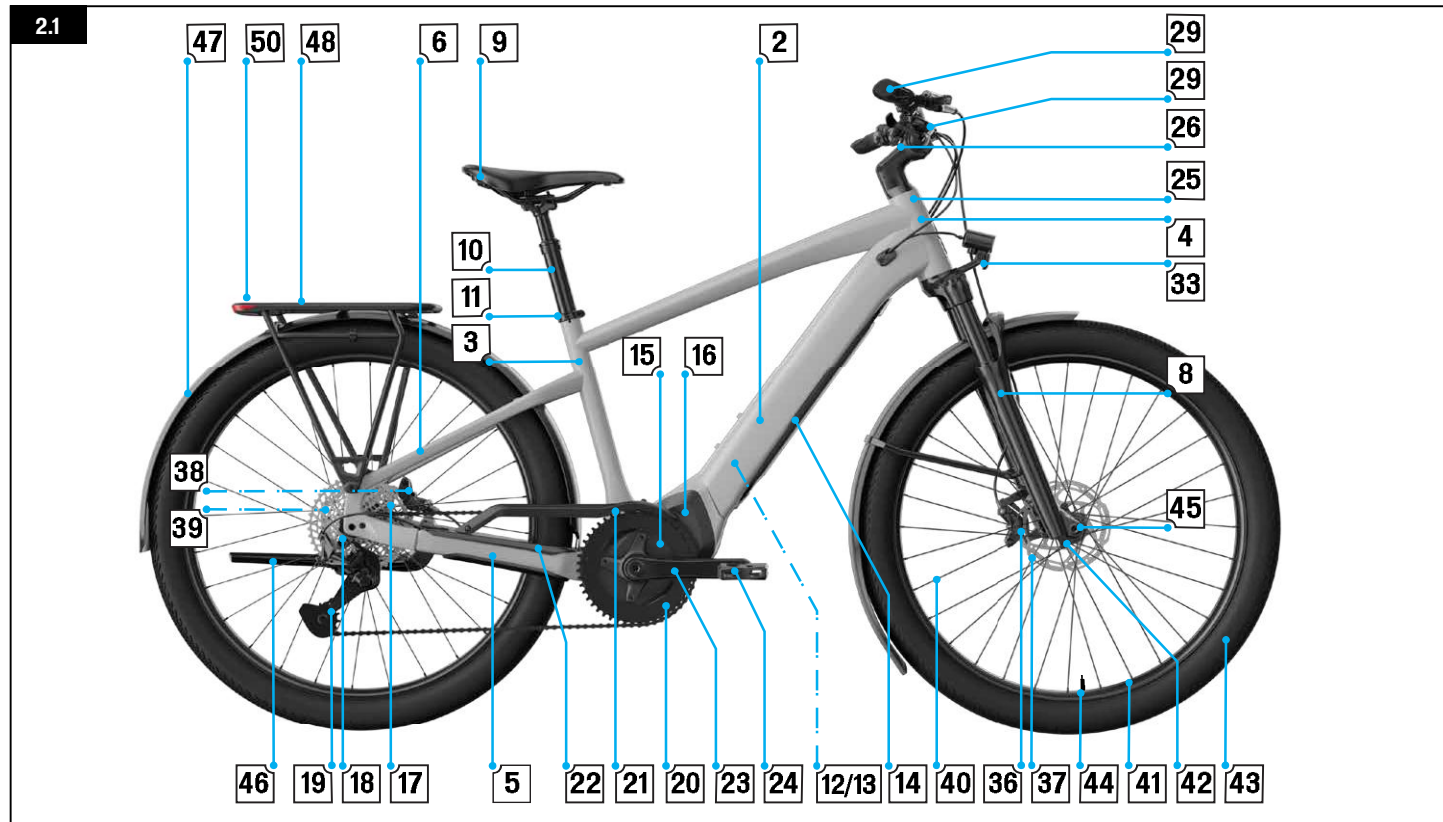
When reading this user manual, you will note various important symbols and warnings, which are explained below:

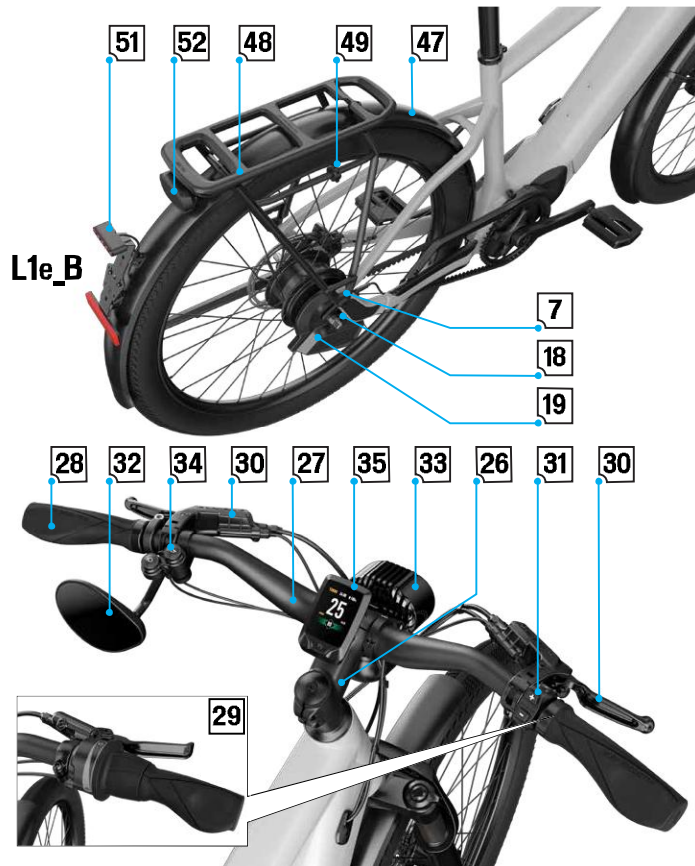
	WARNING! The combination of this symbol and word indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death. Many of the Warnings say "you may lose control and fall." Because any fall can result in serious injury or even death, we do not always repeat the 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.
	GREASE: This symbol means that high-quality grease should be applied as illustrated.
	TECH TIP: Tech Tips are useful tips and tricks regarding installation and use.

1.1. WARRANTY

Please refer to the written warranty provisions provided with your bicycle, or visit www.specialized.com. A copy is also available at your Authorized Specialized Retailer.

2. VADO COMPONENTS





1	TOP TUBE	19	REAR DERAILLEUR / SHIFT INTERFACE*	37	FRONT BRAKE ROTOR
2	DOWN TUBE	20	CHAINRING / SPROCKET*	38	REAR BRAKE CALIPER
3	SEAT TUBE	21	CHAIN GUARD	39	REAR BRAKE ROTOR
4	HEADTUBE	22	CHAINSTAY PROTECTOR	40	SPOKE
5	CHAINSTAY	23	CRANK ARM	41	RIM
6	SEATSTAY	24	PEDAL	42	HUB
7	SEATSTAY COUPLER*	25	HEADSET	43	TIRE
8	FORK	26	STEM	44	VALVE
9	SADDLE	27	HANDLEBAR	45	THRU-AXLE*
10	SEAT POST	28	GRIP	46	KICKSTAND
11	SEAT POST CLAMP	29	SHIFTER*	47	REAR FENDER
12	BATTERY LOCK MECHANISM	30	BRAKE LEVER	48	REAR RACK
13	CHARGING SOCKET	31	REMOTE*	49	PANNIER STOPPER
14	BATTERY	32	MIRROR*	50	TAILLIGHT**
15	MOTOR	33	HEADLIGHT**	51	TAILLIGHT & LICENSE PLATE HOLDER***
16	MOTOR COVER	34	HORN AND HEADLIGHT SWITCH*	52	GARMIN RADAR*
17	CASSETTE / SPROCKET*	35	TCD_W 2 (DISPLAY)		
18	DROPOUT HANGER*	36	FRONT BRAKE CALIPER		

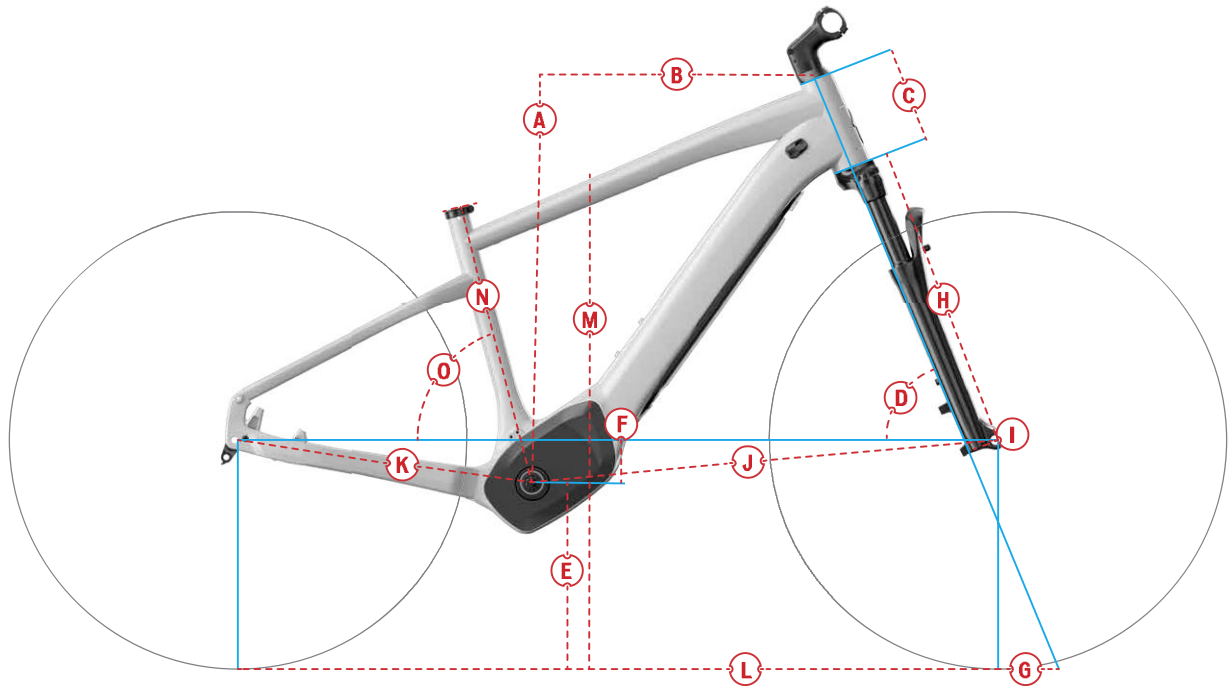
* Not all models are equipped with all the above components.

** Depending on the model the position of the lights may vary.

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

3. GEOMETRY

3.1




INFO: The geometry as summarized in this manual is current as of the date this manual was written and is subject to change. Specialized reserves the right to change the components at any time and without notice, including modifying, reducing, and/or adding features.

	FRAME SIZE	S	M	L	XL
A	STACK	625	639	652	676
B	REACH	423	444	464	481
C	HEADTUBE LENGTH	135	150	165	190
D	HEADTUBE ANGLE	68	68	68	68
E	BB HEIGHT	300	300	300	300
F	BB DROP	70	70	70	70
G	TRAIL	102	102	102	102
H	FORK LENGTH (FULL)	480	480	480	480
I	FORK RAKE/OFFSET	44	44	44	44
J	FRONT CENTER	699	724	750	777
K	CHAINSTAY LENGTH	470.4	470.4	470.4	470.4
L	WHEELBASE	1160	1186	1212	1239
M	BIKE STAND-OVER HEIGHT	750	786	787	821
N	SEAT TUBE LENGTH	400	450	460	500
O	SEAT TUBE ANGLE	75.5	75	74.5	74
	CRANK LENGTH (mm)	170	170	170	170
	HANDLEBAR WIDTH (mm)	680	680	680	680
	STEM LENGTH (L1e_B) (mm)	60 (75)	60 (75)	75 (75)	75 (75)
	SADDLE WIDTH (mm)	155	155	155	155
	SEATPOST MAX INSERTION (mm)	200	260	260	260
	SEATPOST MIN INSERTION	80	80	80	80
	FORK TRAVEL	80	80	80	80

4. GENERAL INFORMATION ABOUT YOUR VADO

4.1. INTENDED USE

The Vado is intended and tested for General Purpose Riding (Condition 2) use only.

	CONDITION 2	Bikes designed for riding Condition 1, plus smooth gravel roads and improved trails with moderate grades where the tires do not lose ground contact.
	INTENDED	For paved roads, gravel or dirt roads that are in good condition, and bike paths.
	NOT INTENDED	For off-road or mountain bike use, or any kind of jumping. Some of these bikes have suspension features, but these features are designed to add comfort, not off-road capability. Some come with relatively wide tires that are well suited to gravel or dirt paths. Some come with relatively narrow tires that are best suited to faster riding on pavement. If you ride on gravel or dirt paths, carry heavier loads, or want more tire durability, talk to your Authorized Specialized Retailer about wider tires.

The Vado is classified as a Pedelec/EPAC. 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.



INFO: Before using your Vado bicycle, please inform yourself of all applicable legal requirements and regulations in your country or state. There may be restrictions on riding your Vado 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 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 bicycles have a fixed pre-set speed limit at which the motor support will automatically shut off. Any unauthorized (attempted) tampering with the power output and/or system is prohibited and will void the warranty.

4.2. PEDELEC / EPAC

If your Vado is classified as a Pedelec, your motor support will automatically shut off when you reach a maximum assistance speed depending on the country of purchase. A driver's license or insurance is typically not required.

4.3. L1e-B S-PEDELEC (SPEED PEDELEC).

If your Vado is classified as an L1e-B S-Pedelec, your motor support will automatically switch off when you reach a maximum speed of 45 km/h (28 mph). The L1e-B S-Pedelec is referred to in this manual as an L1e-B unless otherwise noted.

In many countries, L1e-B 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, headlights, and tail lights.

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

4.4. STRUCTURAL WEIGHT LIMITS



MODEL	CARGO		STRUCTURAL (LB / KG)
	REAR (LB / KG)	FRONT (LB / KG)	
ALL MODELS	59 / 27	33 / 15	300 / 136

STRUCTURAL WEIGHT LIMIT: The maximum total weight (rider and cargo) a bike is designed and tested to support structurally.

CARGO WEIGHT LIMIT: The maximum cargo weight a bike has been designed and tested to support structurally.



WARNING! The specified cargo weight limit applies only to compatible front and rear racks and seat bags where indicated. In case the specified cargo weight limit differs from the cargo weight limit specified by the rack or seat bag manufacturer, always use the lowest limit. If you add any other load-bearing accessories, including, but not limited to, baskets and child carriers, you do so at your own risk in that these accessories have not been tested for compatibility, reliability, or safety on your bicycle. Failure to follow this warning may result in serious personal injury or death.

	INFO: For more information on the intended use and structural weight limits for the frame and components, please refer to the Owner's Manual.
	INFO: Recommended structural weight limits are based on International Standards Organization (ISO) 4210 testing standards (for cargo and rider only).

5. GENERAL NOTES ABOUT RIDING

The Vado 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 bicycle can also be ridden like a normal bicycle without motor assistance by switching the display to the OFF mode. The same applies if the battery charge drops below 4%.

The Vado 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 and not exceeding 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 offers a unique riding experience 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 when entering a 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.
- Braking while steering may reduce the ability to control your bicycle.
- Check the tire pressure regularly. Low pressure can cause the tires to roll inefficiently.
- Do not expose your bicycle to prolonged excessive heat (e.g. direct sunlight).
- Only carry the cargo you need. More weight will drain the battery faster.
- If your bicycle is exposed to cooler temperatures (0°C - 32 °F), keep the bicycle stored indoors until just before riding.



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 (middle setting) mode.



CAUTION: The weight of your Vado 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 without the battery installed. Riding without a battery may damage exposed electrical components.

Make sure the battery mechanism is locked in place and the key is removed before riding.



WARNING! Use caution when viewing or using the display while riding, 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.

5.2. BEFORE RIDING

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 YOUR FIRST RIDE:

- **BATTERY:** Is the battery fully charged?
- **TCD_w 2 DISPLAY:** Are you familiar with the function of the display features?
- **REMOTE:** Are you familiar with the function of the buttons on the remote?

BEFORE EVERY RIDE:

- **BATTERY:** Do you have sufficient battery charge?
- **TCD_w 2 DISPLAY:** Is the display functioning correctly?
- **REMOTE:** Do you know how to use the remote to change the motor support level from OFF to 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. ENVIOLo AUTOMATIq ACCELERATION

The enviolo system automatically shifts to a lower ratio when coming to a stop to ease the required pedal force when you begin riding again. Within a few pedal strokes the pedal pace (cadence) will then be regulated to your preset cadence.

5.4. KNOW YOUR RANGE

Know the range of your electric bicycle before you start your ride. You can calculate your range by visiting www.specialized.com, selecting your Turbo bicycle model, then clicking on the range calculator. In addition to the range calculator, we recommend using the Smart Control feature in the Mission Control App to control your range.

5.5. REMOVABLE YELLOW STICKER

Your Vado bicycle has a sticker adhered to the frame stating the bicycle serial number. Remove this sticker from the bicycle and place it on the last page of this manual for future reference.



5.6. RIDING WITH KIDS

There are many different setups that allow you to ride with kids. Please look at the Riding Safety 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! 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! 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 an axle-mounted trailer, carrier, or trailer cycle, make sure it is compatible and refer to the manufacturer's instructions and your Authorized Specialized Retailer. While Specialized bicycles are generally designed and tested for use by one person at a time, we were able to verify compatibility of certain child-carrying devices with specific bikes when installed in accordance with the manufacturer's instructions. For a complete list, please visit www.specialized.com. You should make sure your bicycle is still safe to ride with the accessory installed and follow all of the safety instructions given by the accessory manufacturer. Also, be sure to not exceed the structural weight limit and cargo weight limit of the bicycle if you use any bicycle-mounted child-carrying accessory except for an axle-mounted trailer, in which case the tow limit is 132lbs / 60kg.



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 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 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 the 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 the frame material. Damage may result in a loss of structural integrity, which may result in a catastrophic failure. This damage may or may not be visible during inspection. Before each ride, and after any crash, you should carefully inspect your bicycle for any 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 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 for wear.
- 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, lubricated, and (partially) disassembled and inspected for signs of corrosion and/or cracks. 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 to wash your bicycle. Even water from a garden hose can penetrate seals and water may seep into components, such as cranks, bearings, or electrical components, potentially causing damage. Use a clean, damp cloth and bicycle cleaning agents (where appropriate) 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.
- From time to time, clean the Speed Sensor magnet on the rear wheel with a soft cloth. Depending on your ride conditions and brake pad choice, dirt and/or metal shavings can collect on the Speed Sensor magnet, which could lead to interruptions in motor support or wrong speed readings.



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! Use a repair stand to support the bicycle during assembly or maintenance, and a bicycle rack for transportation.

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 the bicycle.

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.

6.1. REPLACEMENT PARTS AND ACCESSORIES

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

7. 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 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, including, but not limited to the motor, battery, display, and cable guides, are proprietary to the Vado. Only use originally supplied components and hardware at all times. The use of other components or hardware will compromise the integrity and strength of the assembly. Vado specific components should only be used on the Vado 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.

7.1. HEADSET BEARINGS

The headset uses a 1 1/8" (41.8 mm x 30.5 x 8 mm, 45 x 45°) Campagnolo Standard compatible upper bearing and a 1.5" (52 mm x 40 x 7 mm, 45 x 45°) 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 the bearing surfaces before installation.



WARNING: Inspect the fork, stem, seatpost, and seat tube to ensure that there are no burrs or sharp edges. Burrs and sharp edges can damage carbon and alloy surfaces of the components. Any deep scratches or gouges in the stem or fork can weaken the components. 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.

7.2. SEATPOST MINIMUM AND MAXIMUM INSERTION

Both the frame and seatpost have minimum insertion requirements. In addition, the frame has a maximum insertion requirement to prevent damage to the frame and seatpost.

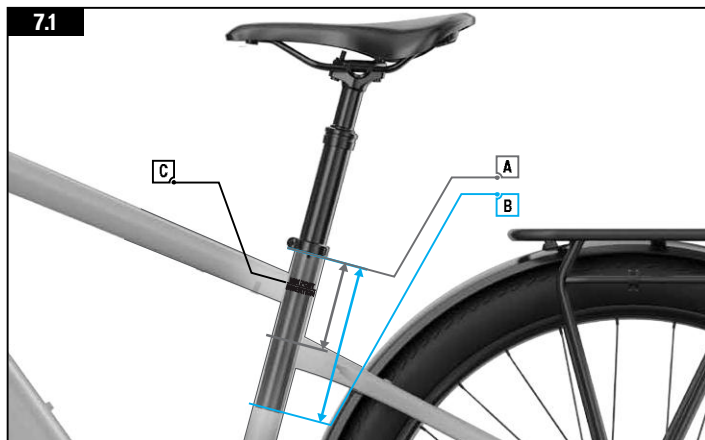


Fig. 7.1

FRAME SIZE	S	M	L	XL
MIN INSERTION	80	80	80	80
MAX INSERTION	200	260	260	260

MINIMUM INSERTION (A)

The seatpost must be inserted into the frame deep enough so the minimum insertion/maximum extension (min/max) mark (C) on the seatpost is not visible. The frame requires a minimum of 80 mm of insertion (A).

MAXIMUM INSERTION (B)

The seat tube is reamed to a specified maximum insertion depth for each frame size. This ream depth limits the insertion depth of the seatpost. Please refer to the table under Fig. 7.1.

If the desired seat height cannot be achieved within the minimum and maximum insertion requirements, the seatpost should be replaced with a shorter or longer one.

Once the saddle height is determined, torque the supplied seatpost collar bolt to 6.2 Nm / 55 in-lbf.



TECH TIP: The specified ream depths are listed in the table under Fig. 7.1. The tolerance of the ream depth can vary from frame to frame. Install a regular 30.9 seat post in the seat tube to verify the actual ream depth of the frame.



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

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



WARNING! For general instructions regarding the installation of the seat post, refer to the appropriate section in the Owner's Manual. Riding with an improperly tightened seat post can allow the saddle and seat post to slide down, which can damage the frame and cause you to lose control and fall.



WARNING! Inspect the seat post and seat tube to ensure that there are no burrs or sharp edges. Remove any burrs or sharp edges using fine-grit sandpaper.

7.3. DERAILEUR/DROPOUT HANGER

Non-enviolo Internal Geared Hub (IGH) equipped Vado models are fitted with an Amazinger 2.1 derailleur hanger mounted directly at the rear dropout.

enviolo IGH equipped Vado models have left and right adjustable sliding dropout hangers to which the enviolo internal geared hub is mounted. These dropout hangers control the tension of the belt and the alignment of the rear wheel.



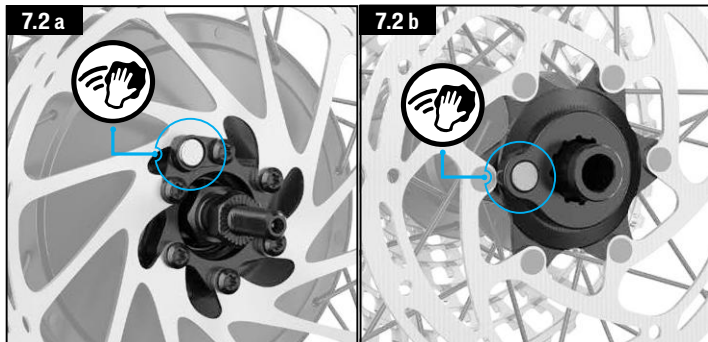
INFO: Non-enviolo IGH equipped Vado models are not compatible with an enviolo IGH.

7.4. SPEED SENSOR

The Vado is equipped with a speed sensor magnet, located on the rear hub/disc rotor interface with either a 6 bolt rotor mounted (A) or a Centerlock™ (B) mounted version.

Dirt and/or metal debris may accumulate on the speed sensor magnet. Too much accumulation may result in interruptions in motor support and/or inaccurate speed readings.

Regularly check your Speed Sensor magnet for an accumulation of dirt and/or metal debris, and clean accordingly (A-B). The frequency of the cleaning depends on your riding conditions, ride frequency, and/or brake pad material. Removing metal debris may require the use of a magnet stronger than the speed sensor magnet.



WARNING! Be sure not to touch the speed sensor magnet while the wheel is in motion. Also, the brake rotors may be extremely hot after riding.

7.5. RACKS AND FENDERS

The Vado is equipped with a front fender and a rear fender attached to the rear rack. An optional front rack can be fitted to the bicycle via mounts behind the faceplate on the head tube.



Fig. 7.3

- The front fender is mounted directly to the fork crown (A). Using a 4 mm hex key torque the bolt to 4 Nm / 35 in-lbf
- The front fender stays are mounted to the rear of the suspension forks (B), using a 3 mm hex key torque the bolts to 4 Nm / 35 in-lbf.

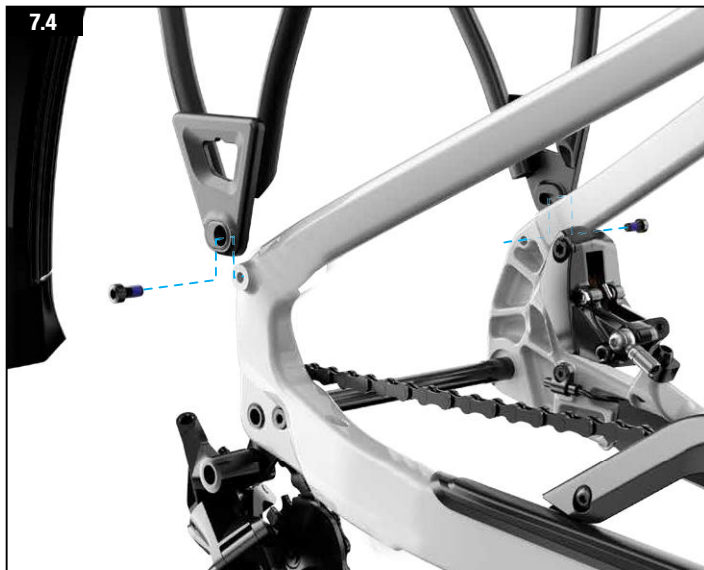


Fig. 7.4

- The rear rack is combined with the rear fender and is attached with bolts to mounting tabs at the dropouts to support the vertical rack stays. Using a 5 mm hex key, torque the bolts to 9 Nm / 80 in-lbf Nm.

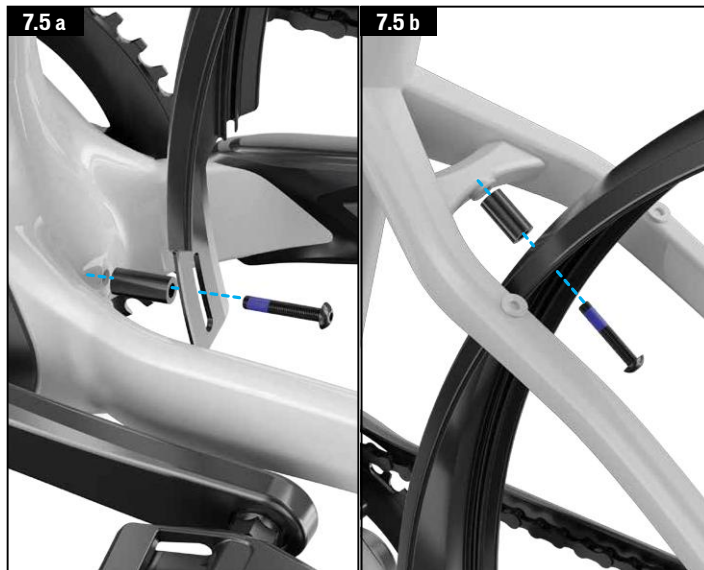


Fig. 7.5

- The rear fender is mounted directly to the frame using the seatstay bridge insert (A) and the chainstay bridge insert (B). Using a 4 mm hex key torque the bolts to 4 Nm / 35 in-lbf.

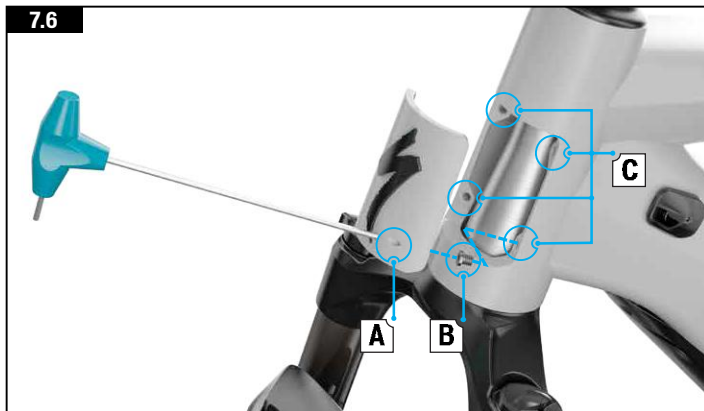


Fig. 7.6

- Insert a 2.5 mm hex key into the screw hole (A) on the faceplate and loosen the bolt hidden in the head tube (B), then remove the faceplate.
- The faceplate covers 4 threaded bores (C) which are used to mount the front rack. See the rack user manual for the proper installation procedure.



WARNING: The maximum allowed cargo weight is 27 kg for the rear rack and 15 kg for the front rack. In addition, make sure to not exceed the structural weight limit of the bicycle as stated in the Owner's Manual.



WARNING! Racks and baskets, especially when loaded, will affect the handling of your bicycle by altering the center of gravity, weight, and balance. Before your first ride, you should practice riding in a controlled environment.



WARNING! The optional front rack is attached to the front end of your bicycle, and as a result, a proper and secure installation by your Authorized Specialized Retailer is critical for your safety. Only use original hardware at all times. Improper installation or adjustment may result in an accident, which can cause serious personal injury.



WARNING! Correct tightening force on fasteners (nuts, bolts, screws) on your bicycle is important. If too little force is applied, the fastener may not hold securely. If too much force is applied, and the fastener can strip threads, stretch, deform or break. Either way, an 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.

7.6 RACK ACCESSORY MOUNTS

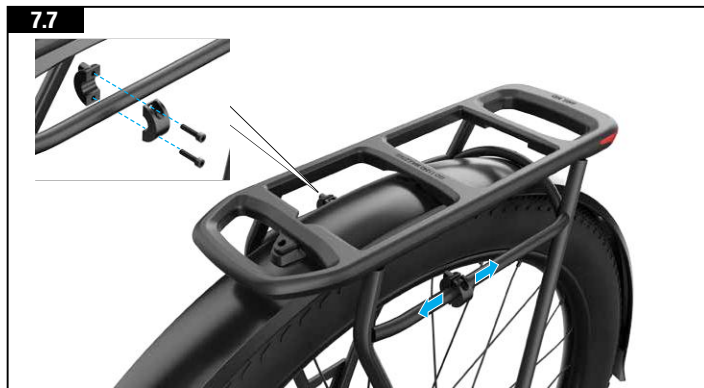


Fig. 7.7

- The rear rack is fitted with adjustable stoppers, these stoppers allow the use of a variety of pannier bags and it stops the bag from sliding on the rail.
- To adjust the stopper loosen the bolts on the stopper and slide it forwards or backwards to align with the pannier bag mounts then tighten it in the desired position.
- The top plate of the rear rack offers the unique MIK HD mounting profile which allows for easy fitment of a wide variety of accessories such as bags, baskets, and child seats fitted with the MIK or MIK HD interface.



INFO: For more information on the MIK HD mounting system or accessories visit the manufacturer's website.



CAUTION: The maximum load capacity of the fitted rear rack is 27 kg, however, the weight limit of the accessory may be lower. Always adhere to the lower of the weight limits of either the rack or the accessory.

7.7 LIGHTING

All Vado models are equipped with an LED headlight and taillight. The lights on the Vado turn on automatically when the bicycle is powered on and can not be turned off while riding.

Depending on the model, the setup of the lights will differ.



Fig. 7.8

- On the Vado L1e-B, the rear light is mounted on the rear fender and the headlight is mounted to the handlebar.
- The headlight on the L1e-B cannot be turned off. After switching on the bicycle, the daylight

beam or the low beam setting is activated. The setting is automatically adjusted when riding according to the environment lighting via the light sensor in the headlight.

- The headlight can then only be set to high beam or low beam/daylight beam.
- The high beam is activated on the handlebar-mounted light switch (fig 7.7). The switch illuminates when the high beam is activated.



Fig. 7.9

- For all other models, the rear light is integrated into the rear rack and the headlight is mounted on the front fork.



INFO: After initiating charging, the lights automatically power off to conserve energy.



INFO: The headlight and taillight spec may vary depending on the bike model and country requirements.

8. SYSTEM INTERFACE



INFO: The functionality of the system interface as summarized in this manual is current as of the date this manual was written and is subject to change. Specialized reserves the right to change the functionality at any time and without notice, including modifying, reducing, and/or adding features.



WARNING! Use caution when viewing or using the display while riding, 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. Do not attempt to customize the pages or perform setup adjustments while riding.

8.1. TCD_w 2 (DISPLAY)



Fig 8.1

All Vado models are equipped with the TCD_w 2 display. The display turns on the system and provides information on the display.

- The TCD_w 2 is used to power the bike and on and off (A).
- The display is designed not to be removed from the bicycle and is secured into the mount with a security screw from the underside of the mount (B). Removal of the display will require removal of the mounting bracket from the stem/handlebar. Any modifications and changes should be done by an Authorized Specialized Retailer.
- The USB-C port on the right side of the display (C) is for Specialized retailers and service centers only. Make sure the rubber port seal is firmly in place when in use.
- The USB-C port can be used to charge your phone and other accessories with up to 1A current.
- Do not expose the display to intense heat or sunlight for a prolonged period. This can damage the display and/or battery.
- Only use a damp or dry soft cloth to clean the display. Do not use harsh cleaning products.
- Do not disassemble or drop the display.
- Make sure the display and mount are firmly installed on the handlebar before riding.

8.2. STARTING THE SYSTEM ON THE TCD_w 2



Fig. 8.2

- To start the system, press and hold the POWER button located on the display until the display turns on.
- To power off the system, press the POWER button again.

8.3. HANDLEBAR REMOTES

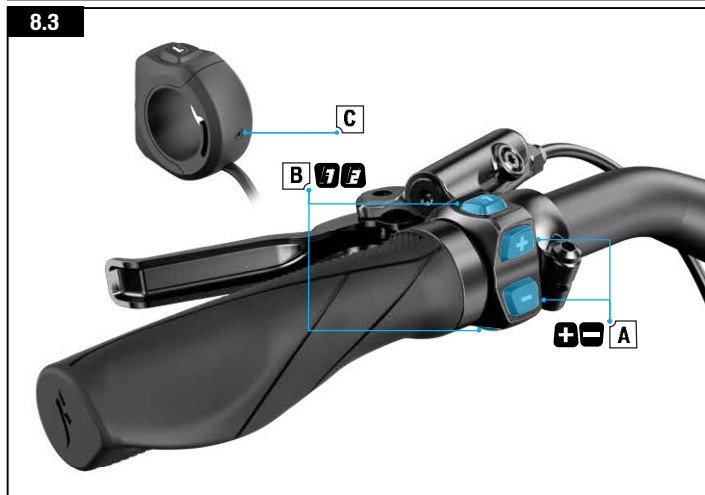


Fig. 8.3

The handlebar remote is included on all Vado models. It controls the level of motor support and controls the functions and scrolling of the TCD_w 2.

- **A:** (+) (-) Support adjustment buttons. Navigating and setting up the TCD_w 2. Pressing and holding the (+) button activates the walk-assist mode.
- **B:** Function buttons F1 and F2 (scrolling and setting up of the TCD_w 2)
- **C:** Compression screw (2 mm hex key 0.8 Nm 7 in-lbf).

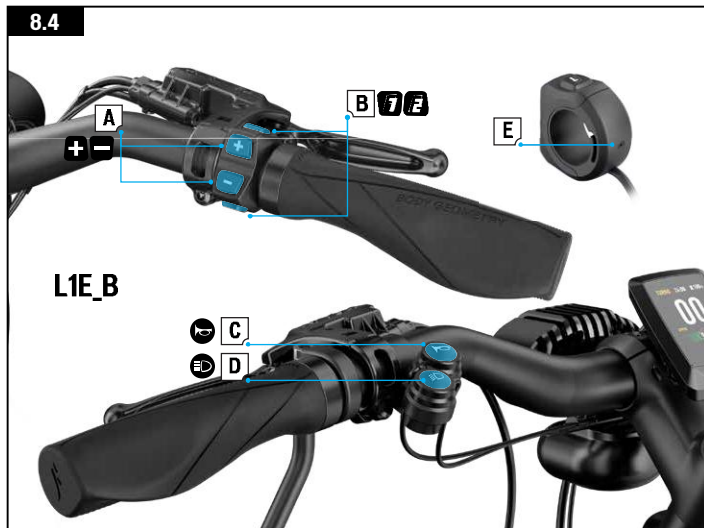


Fig. 8.4

The handlebar remote and light is included on all L1e-B Vado models and controls the level of motor support and controls the functions and scrolling of the TCD_w 2.

- **A:** (+) (-) Support adjustment buttons. Navigating and setting up the TCD_w 2. Pressing and holding the (+) button activates the walk-assist mode.
- **B:** Function buttons F1 and F2 (scrolling and setting up of the TCD_w 2)
- **C:** HORN: (L1e-B) Sounds the horn while pressed.
- **D:** LIGHT: (L1e-B) Activates the high beam.
- **E:** Compression screw (2 mm hex key 0.8 Nm 7 in-lbf).



INFO: To meet regulatory requirements for the Vado L1e-B model, the remote is installed on the right side of the handlebar and the horn and light remote is installed on the left side of the handlebar.

8.4. REMOTE FUNCTIONS

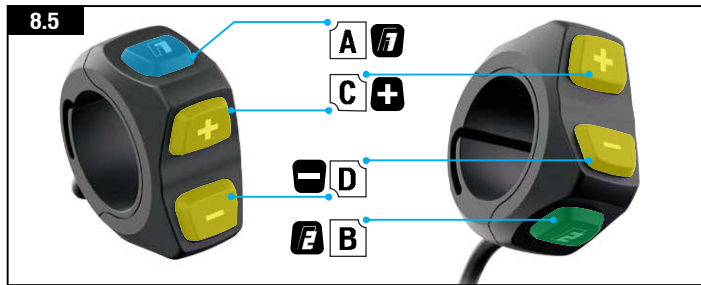


Fig. 8.5

A - F1 BUTTON:

- Toggles pages on the TCD_w 2 to show different fields such as odometer, speed, and distance.
- Settings & menu navigating.

B - F2 BUTTON:

- **ENVIOLo AUTOMATIq HUB:** Long press toggles between standard modes and Micro Tune.
- **ENVIOLo AUTOMATIq HUB:** Short press toggles the enviolo cadence adjustment and Assist / Micro Tune modes.
- **STANDARD HUB:** Long press toggles standard modes and Micro Tune mode.
- Settings & menu navigating.

C - (+) BUTTON:

- Short press increases the amount of support.
- Pressing and holding activates the walk-assist mode.
- **ENVIOLo AUTOMATIq PEDAL PACE:** When activated, a short press increases the target pedal pace on the enviolo hub.

D - (-) BUTTON:

- Short press decreases the amount of support.
- Long press resets the trip.
- **ENVIOLo AUTOMATIq PEDAL PACE:** When activated, a short press decreases the target pedal pace on the enviolo hub.

C&D - (-)(+) DUAL BUTTON PRESS:

- A long dual press opens the settings menu on the TCD_w 2.

8.5. SUPPORT MODES

The Vado motor offers 6 Bike Assist Modes: TURBO, SPORT, ECO, OFF, SMART CONTROL, and MICRO TUNE.

STANDARD BIKE ASSIST MODES:

- **TURBO MODE:** Maximum power mode for high-speed sections and climbing.
- **SPORT MODE:** Maximum control, with sufficient power on demand.
- **ECO MODE:** Most efficient mode for maximum range while offering good power.
- **OFF MODE:** The motor will not offer any assistance, but the display and lights will still function.
- **SMART CONTROL MODE:** The motor, while pedaling, adjusts the power output based on the ride parameters determined in the Mission Control App.

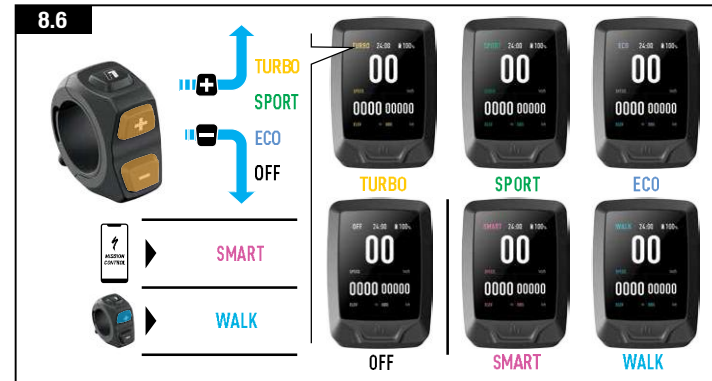


Fig. 8.6

When changing support modes the color on the display will change based on the support mode selected for quick reference.

- (+) Button - Increases the amount of support.
- (-) Button - Decreases the amount of support.



INFO: 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** to **OFF**, you have to press the (-) button. To increase from **OFF** to **ECO** to **SPORT** to **TURBO**, you have to press the (+) button.



INFO: The Smart Control mode is only accessible when the bicycle is connected to Mission Control and Smart Control mode is turned on. When more or less motor support is needed or desired, Smart Control can be bypassed for a short period of time by toggling between the **OFF/SMART/TURBO** modes. Smart Control will then automatically reactivate after a short period of time. Smart Control mode can only be turned off in Mission Control.

MICRO TUNE MODE:

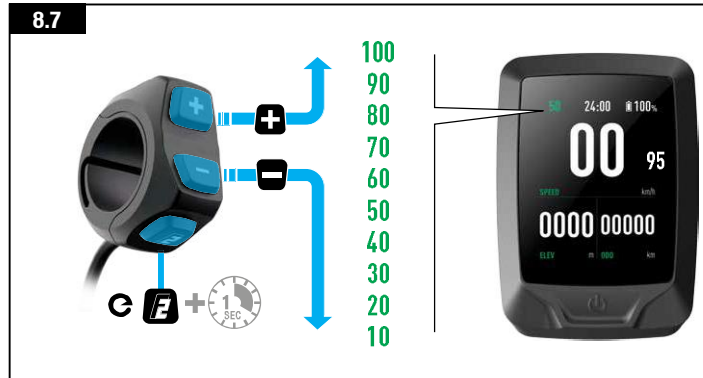


Fig. 8.7

Micro Tune mode allows you to simultaneously change the support and peak power in 10% increments whilst riding. When activated the Micro Tune setting will show in the top left corner of the display.

- Short-pressing the F2 button on the remote will switch to Micro Tune mode.
- Use the (+) (-) buttons to increase or decrease the value.
- To switch out of Micro Tune and back to standard modes, short-press the F2 button.

ENVIOLLO AUTOMATIQ IGH:

- Long-pressing the F2 button on the remote will switch to Micro Tune mode.
- Use the (+) (-) buttons to increase or decrease the value.

To switch out of Micro Tune and back to standard modes, long-press the F2 button.



INFO: Connect your bicycle to Mission Control to see more about tuning your bicycle.

8.6. PEDAL PACE BAR ON THE TCD_w 2

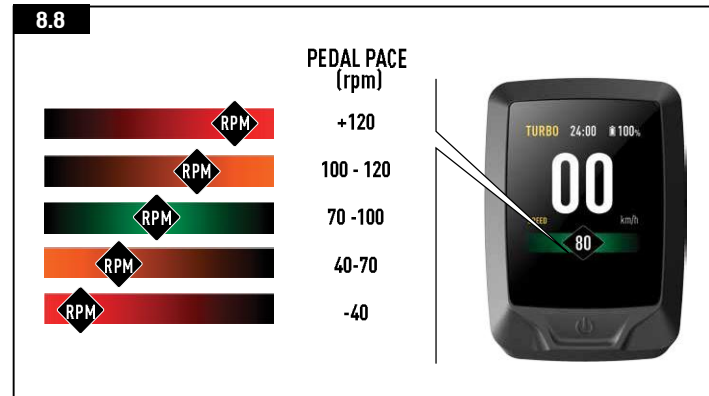


Fig. 8.8

- Certain pages of TCD_w 2 show the interactive pedal pace bar. The bar shows your current pedal pace and guides you to the optimal pedal pace.
- When your pedal pace decreases, the icon on the cadence bar moves to the left and turns from green (ideal) to orange (low) to red (too low). When the pedal pace gets too high, the icon on the bar shifts to the right and turns from green (ideal) to orange (high) to red (too high).
- For best motor support, efficiency, and range, you should keep your pedal pace in the green section of the pedal pace bar.

8.7. CHANGING GEAR RATIO ON THE ENVIOLo MANUAL HUB



Fig. 8.9

Certain Vado models are equipped with the enviolo manual hub. Changing the gear ratio on the hub is done via the shifter on the right side of the handlebar.

- Rotate the controller grip clockwise to shift into low ratios for starting or climbing.
- Rotate the controller grip counterclockwise to shift into high ratios for higher speeds.



INFO: For more information on the enviolo manual shifting setup, please refer to the manufacturer's manual.

The component image shown above is current as of the date this manual was written and is subject to change. Specialized reserves the right to change the components at any time and without notice, including modifying, reducing, and/or adding features

8.8. ENVIOLo AUTOMATIq HUB, PEDAL PACE AND GEAR INDEX

With the enviolo AUTOMATIq IGH system, you do not need to worry about shifting manually at all. You set the target pedal pace at which you are most comfortable pedaling and the transmission is controlled automatically, so you can always pedal at the same pace, even up or downhill.

The pedal pace (cadence) of the enviolo IGH is adjusted with the handlebar remote and displayed on the TCD_w 2.



INFO: The preset cadence is set at 75 Rpm.

ADJUSTING PEDAL PACE

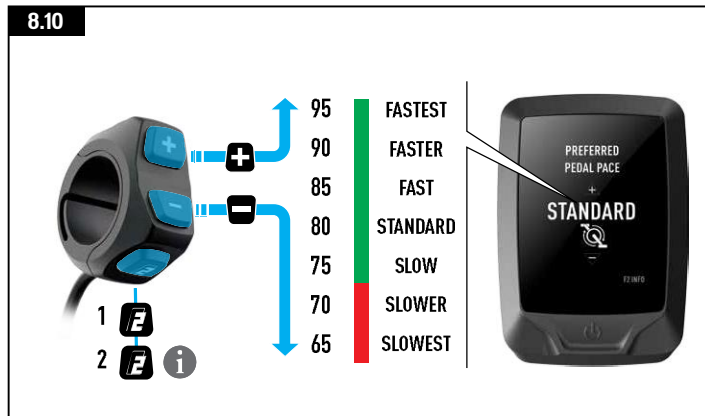


Fig. 8.10

- Short-pressing the F2 Button will activate the enviolo pedal adjustment. The level will automatically be displayed on the TCD_w 2.
- Short-pressing the (+) button increases the desired pedal pace while short-pressing the (-)

button decreases the desired pedal pace.



INFO: The pedal pace page for the enviolo AUTOMATI*Q* IGH is displayed for 5 seconds after the last button push and will then revert to the previous layout.

GEAR INDEX

The enviolo AUTOMATI*Q* IGH system does not have an unlimited gear index and has upper and lower limits. Once these limits have been reached, the bicycle will require more or less effort to pedal the bicycle depending on the gradient. When the gradient is too steep, the motor support and the enviolo IGH may not be able to support your desired pedal pace.

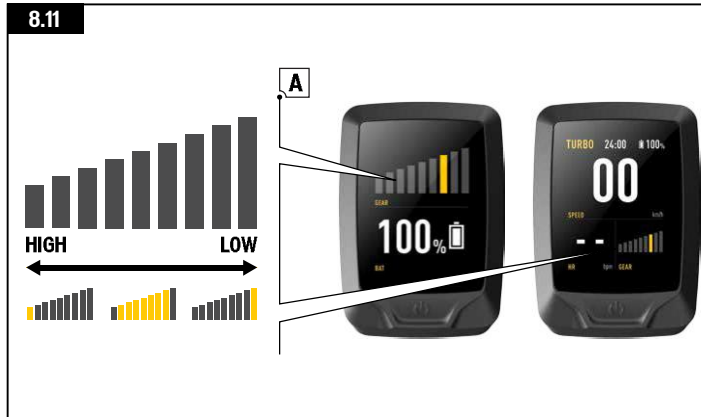


Fig. 8.11

- For reference, the gear index can be displayed on the TCD_w 2 and can be shown in a field on any customizable page of your display.
- The colored bar on the graph will change according to the current gear index and show when you have reached the gear limits.



INFO: To set up and customize the Gear index on the TCD_w 2, connect your bike to Mission control (Section 9).

8.9. SYSTEM SETUP & CUSTOMIZING PAGES ON THE DISPLAY

The TCD_w 2 has customizable screens that show options such as Speed, odometer, battery charge level, mode, heart rate, and more.

To fully customize the setup of the TCD_w 2, pair your bicycle to Mission Control and adjust your preferred settings in the app.

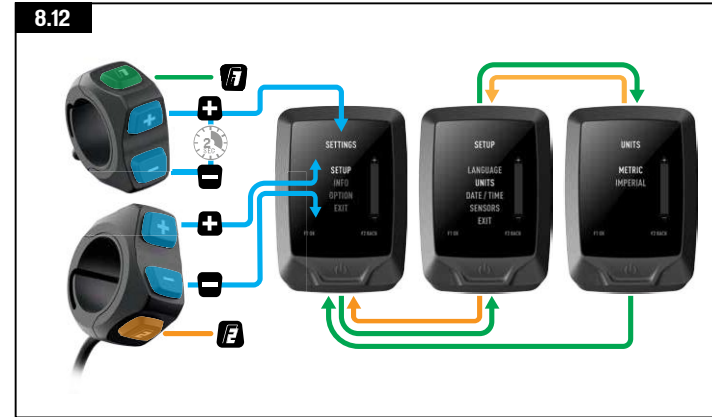


Fig 8.12

- To set up units, date and time, view legal information, and pair sensors on the TCD_w2 display, press and hold the (+) and (-) buttons on the remote for two seconds to open the settings menu.
- To navigate the settings, use the remote (+)(-) buttons to scroll. Use F1 for OK and F2 for BACK.

8.13



Fig. 8.13

The layout and pages on the TCD_w 2 can be customized and set up according to your preference, layouts, and pages are only customizable in Mission Control.



INFO: For more information on connecting to and using Mission Control, see section 9 of this manual.

8.10. CONNECTIVITY OPTIONS

The Turbo Technology System provides a high degree of interface flexibility through Bluetooth and/or ANT+ connectivity.

BLUETOOTH LOW ENERGY (BLE)

BLE is used for connecting to the bike to the Mission Control app.

ANT+

ANT+ can be used to connect to the sensors for Speed, Rider Power, and Cadence. The sensor data can be received via the ANT+ module built into the TCD_W 2.

In your ANT+ device, search for those sensors and connect to them.

Some bicycle-specific ANT+ devices feature so-called “LEV” data fields you can use to see all available e-bike data.

8.11. GARMIN RADAR

Some Vado models are fitted with the Garmin radar system designed to warn you of vehicles approaching you from behind.



WARNING! Before using the Garmin radar system, please read the applicable sections in the provided manual(s), including all safety warnings and instructions.



WARNING! While the Garmin radar device can be used as general guidance with respect to vehicles approaching directly from behind you, make sure you are aware of your surroundings at all times. Depending on size, speed, location, not all traffic participants may be accurately detected and displayed.

STARTUP

8.14



Fig. 8.14

The Garmin radar system is integrated into the TCD_w 2 display and appears on the left side of the display on equipped models (A).

When the bicycle starts up, the radar is shown as a flashing yellow (B) marker on the top left side of the display, when the system is activated it will turn green (C).



INFO: If the bicycle is equipped with Garmin radar and does not activate, please contact your nearest Authorized Specialized Retailer.

VISUAL ALERTS

8.15



Fig. 8.15

The vehicle position marker moves up the screen the closer the vehicle gets to your bike (A), the further down on the screen the further the vehicle will be.

- The dot changes color based on the detected proximity and/or speed of the approaching vehicle.
- A green dot (B) in the corner of the screen means that no vehicle was detected.
- A yellow dot (C) means that a vehicle is approaching.
- A red dot (D) means that a vehicle is approaching very quickly.
- Multiple dots (E) indicate multiple vehicles.

SOUND ALERTS

The TCD_w 2 emits an alarm tone for various alerts.

The alarm tone for an approaching vehicle differs from the tone when the vehicle has passed. The device will sound an alert as soon as another vehicle is detected.



INFO: Activating or disabling tones can be done in the TCD_w 2 Settings.



INFO: The Garmin Radar is compatible with all Vado models and can be fitted to any model. Installation of the Garmin Radar on non-equipped bicycles requires specific parts and physical system integration and should be performed by an Authorized Specialized Retailer.

8.12. ERROR MESSAGES

8.16



Fig. 8.16

TCD_w 2 has a built-in diagnostic system to automatically check and identify the functionality of the system. If the system detects an error, it shows on the display. In some cases, the error message can be dismissed by pushing any button on the remote.

Depending on the type of error message, the system may be switched off automatically. In any case, the bicycle can be ridden without motor support with the system turned off. If you receive such an error, please restart the system. If the error message continues to be shown, please contact your Authorized Specialized Retailer for further instructions.



INFO: Mission Control supports the rider with User Actions for errors and diagnostic reports which can be shared with Retailers who can give further advice based on the bike serial number.

8.13. PERFORMING A FACTORY RESET ON THE TCD_w 2

When a new or used bicycle is sold, the new user should perform a factory reset of the TCD_w 2 display, to reset the peak power and support mode settings.

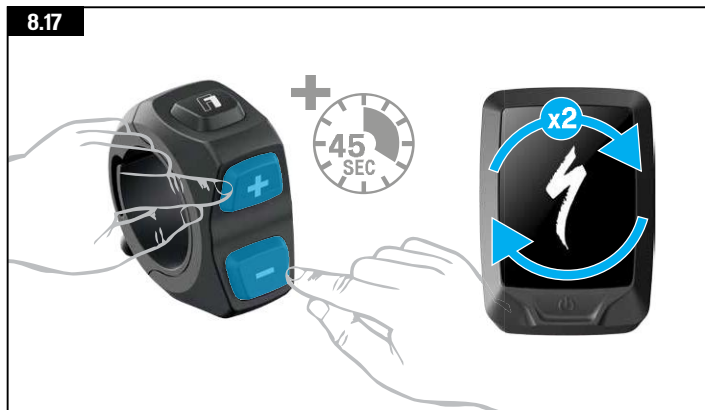


Fig. 8.17

Dual press and hold the (+) (-)and buttons for 45 seconds. During this process, the TCD_w 2 will reboot twice.

Release the buttons when the TCD_w 2 reboots for the second time.

9. MISSION CONTROL

The Specialized Mission Control App enables you to further enhance your Vado ride experience to your personal needs.

Most importantly, the app allows you to customize motor characteristics, diagnose the bicycle system, record rides, see real-time ride data, and control bicycle range.



INFO: The functionality of the Mission Control interface as summarized in this manual is current as of the date this manual was written and is subject to change. Specialized reserves the right to change the functionality at any time and without notice, including modifying, reducing, and/or adding features.

9.1. MISSION CONTROL FUNCTIONS

The following information will help you understand how to get the most out of your Turbo with our Mission Control App.



Fig. 9.1

1: RIDE:

Record your rides, route, speed, elevation, and more. See the live map and view live ride data.

Activating Smart Control means you don't have to worry about the mode setting or battery capacity during your ride. You set Smart Control by distance, duration, or heart rate goal, and let your bike do the rest.

2: TUNE:

Customize and transform your ride based on your wants by adjusting your motor performance based on Support and Peak Power.

You can save your tune settings as a custom preset by tapping the (+) symbol. Save multiple presets for your different types of rides. If you later edit the preset value, you can either save the new settings by selecting Update or you can keep the original values by choosing Reset.

3: MY RIDES:

View your recorded rides and even export them as .gpx file. With Mission Control integration, rides recorded using the app will be shared to a linked Komoot or Strava account.

4: DIAGNOSE:

System Status tells you, at a glance, if your Turbo system is healthy or if an action is required. Any live system events are shown and a solution is supported through simple steps you can carry out yourself. If there is a deeper error, you will be referred to your local Specialized retailer. For specific bikes, you can even run remote diagnostics with your retailer by using the Advanced Diagnostic feature.

You will also be able to check the odometer, serial number, wheel circumference, and charge cycles.

5: SETTINGS:

In Settings, you can define general app parameters and connect / manage to your bike. Edit your user profile, along with options for your ride settings, including integration to Strava or Komoot.

9.2. IN-APP HELP GUIDE

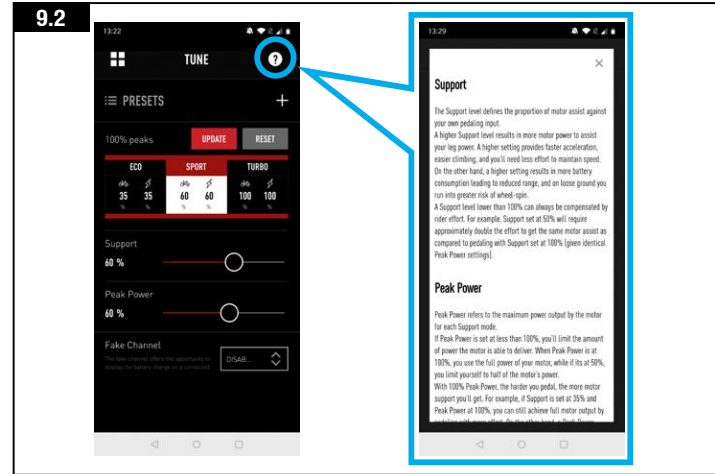


Fig. 9.2

More in-depth information can be found on the individual screens within the app. You'll be able to access the in-app help guide by tapping on the (?) button in each section of Mission Control. This in-app help guide holds explanations on the key terms and features related to the individual screens. To view this feature, you must be online using WiFi or data.

9.3. DOWNLOAD AND INSTALL MISSION CONTROL

To download the Mission Control app, go to the App Store (iOS devices) or the Google Play Store (Android devices), search for "Specialized Mission Control," and install the application. Once you've installed the Mission Control app, you can sign in using the same email address and password for other Specialized digital properties (Specialized.com, Ride, Power Cranks, Retül) or you can create an account from the app. A verification email will be sent to you with a link to verify your account. Only after verifying your email will you be able to connect Mission Control to your bike.

9.4. PAIRING YOUR BIKE WITH MISSION CONTROL

When connecting to the Mission Control App for the first time, you need to pair it using a code with your Vado. The code serves as a security measure since it ensures that only you as the bike owner, or entrusted people you share the code with, can connect to the bike.

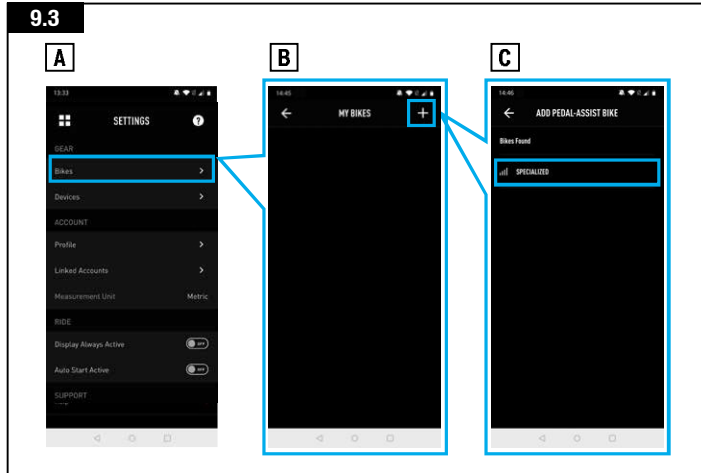


Fig. 9.3

- In the Mission Control App settings, select BIKES, then tap (+) to get to the ADD PEDAL ASSIST BIKE screen.
- Select the bike serial number that matches the bike you are pairing to.

i **NOTE:** The bike serial number can be found on the frame or the removable yellow sticker.

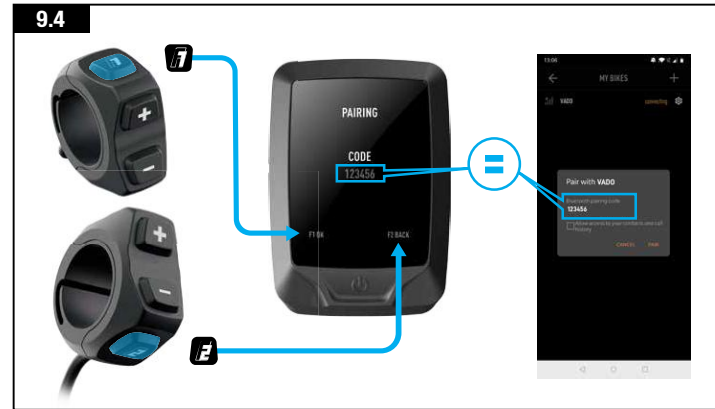


Fig. 9.4

- When the app prompts you confirm the six-digit pairing code. The code will be displayed on the TCD_w 2 screen. Follow the instructions displayed on the TCD_w 2 and in-app messages to complete the connection.
- Once connected, the bike serial number will appear in green at the bottom of the screen, with the connection status being displayed in green as “connected”.

i **INFO:** The pairing with your bike only needs to be established once via the Mission Control App, unless you clear your device Bluetooth history.

9.5. CUSTOMIZING THE TCD_w 2 DISPLAY

The TCD_w 2 is shipped with multiple standard screen configurations. With Mission Control you can add more screens, customize the layouts, rename them, and change the stats displayed.

i **INFO:** For more information go to <https://support.specialized.com/home/missioncontrol>

10. BATTERY AND 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 bicycle:

- Only operate the battery between the temperature range of -20° C and +60° C (-4° F and +140° F).
- Only use the Vado battery with the Vado bicycle. Do not use the Vado battery with any other bicycle or any other battery with the Vado bicycle, even if it fits.
- Always turn the bicycle off before connecting or disconnecting the charger from the charge port.
- 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 charge 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.
- Turn off the bicycle, 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 bike is OFF before disconnecting the battery. 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 and the lever is in the locked position.



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.

10.1 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 clean and dry before connecting and charging the battery.
- Only use the supplied charger cord. Ensure the cord plug is fully inserted in the charger before plugging the charger into a power outlet.
- 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.
- 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.
- Place the charger and battery if removed from the frame on a stable, level surface unaffected by heat.
- Plug the charger's plug into an outlet, using the appropriate plug for the country's standards, then connect the charging plug with the charging socket on the battery.
- Specialized recommends charging the battery in an area with a smoke detector.



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.



CAUTION: Always turn off the bicycle before plugging or unplugging the charger.



INFO: The battery can be charged whether installed in the bicycle or not. Refer to the appropriate instructions regarding removing and installing the battery.



INFO: Only charge the battery at an ambient temperature between 0° C and +45° C (+32° F and +113° F). If outside temperatures are too hot or too cold, charge the battery inside. For safety reasons, if the battery is too hot or too cold, it will not charge.



CAUTION: Certain charger models may have a voltage input depending on the country. Check the charger label for more information.

- Insert the charger plug into the socket. The magnet connector will help the plug locate into the socket (C).
- When the charge plug is connected, the TCD_w 2 will indicate that charging has started (D).



INFO: After charging begins, the lights automatically power off to conserve energy.

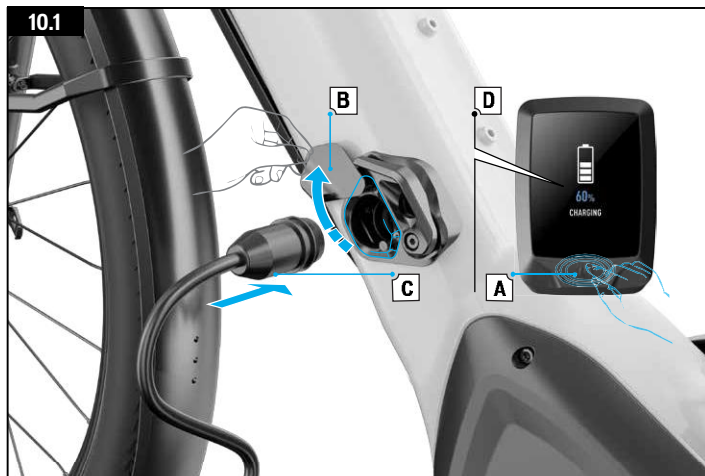


Fig. 10.1

- Plug the charger's plug into an outlet using the appropriate plug for the country's standards.
- Power off the bicycle on the TCD_w 2 (A).
- Locate and open the magnetic charge port cover on the side of the battery located on the downtube (B).

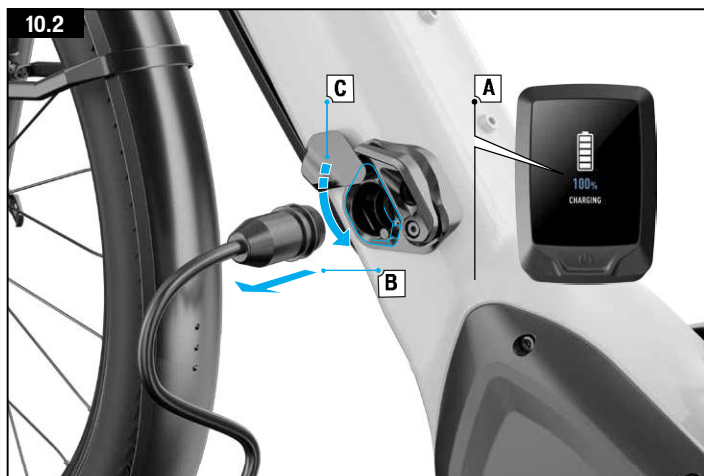


Fig. 10.2

- When charging is complete (A), disconnect the charging plug from the charge port (B).
- The magnetic charge port lid will drop closed to seal it against water and debris (C).
- Unplug the charger from the wall socket.

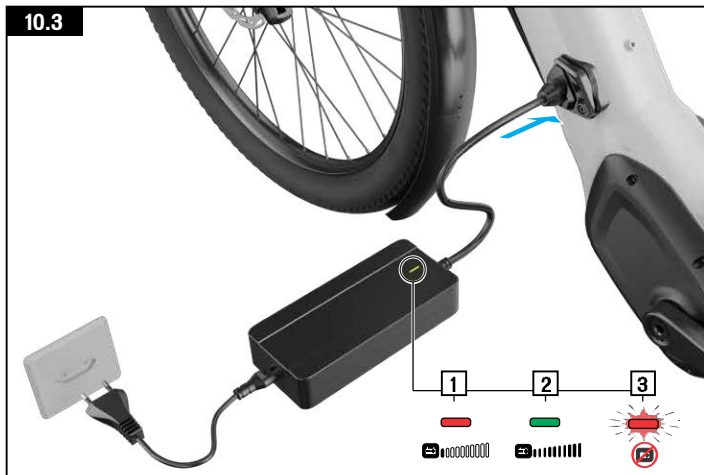


Fig. 10.3

- During the charging process, the diode on the charger will glow red (1). When the battery is fully charged, the diode on the charger will turn green (2).



CAUTION: If the red diode flashes during the charging process (3) a charging error has occurred. In that case, remove the charger from the socket, discontinue use of the motor support and contact your Authorized Specialized Retailer.



INFO: The Battery Management System (BMS) is designed to protect a fully discharged battery from damage for a period of time. However, in order to maintain the best possible battery performance and lifespan, Specialized recommends regularly recharging the battery to at least 60% full.



INFO: Please note that Li-ion batteries gradually lose capacity depending on age and use. Strongly reduced operating time after fully 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.

10.2. TCD_w 2 CHARGE LEVEL DISPLAY

10.4



Fig. 10.4

The charge level of the battery is displayed during your ride on the display of the TCW_w 2. The charge level can be customized to be shown in any of the fields on any page of the TCW_w 2.

At approximately 10% (depending on cell temperature and other factors) battery charge remaining, the system will start to reduce the amount of motor support to ensure continuous assistance at lower charge levels. At 4%, the system switches off motor support, leaving the bike powered on. This not only supports battery health and lifetime, it also allows you to keep wired lights powered for about 2 hours.

If your bicycle is at a standstill for 15 minutes or longer, the system will turn itself off to save power. In order to continue riding with support, you have to turn the system on again.



WARNING! When the battery level has dropped low enough for the motor system to shut off and the bike to go into power saving mode, wired lights will be powered only for a limited period of time providing some visibility, up to approximately 2 hours depending on multiple factors. You should stop riding as soon as possible and charge the battery. Lights may shut off at any time without further warning.

10.3. REMOVING & INSTALLING THE BATTERY

UNLOCK AND OPEN THE BATTERY LATCH

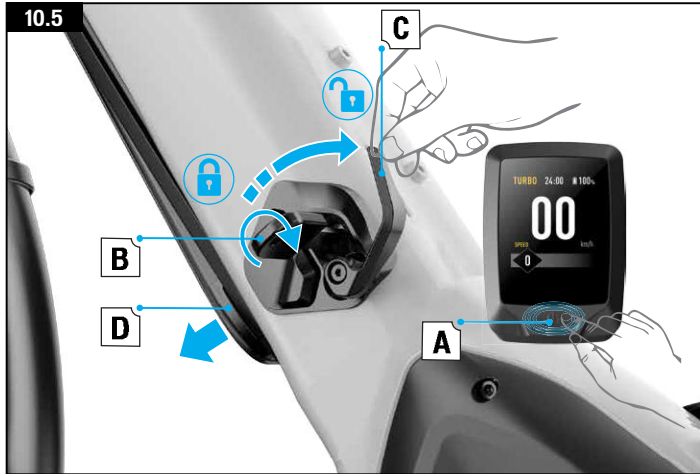


Fig. 10.5

- Power off the bicycle on the TCW_w 2 (A).
- Use the supplied key to unlock the battery latch (B).
- Rotate the latch lever clockwise (C) to release the battery (D).

REMOVE THE BATTERY

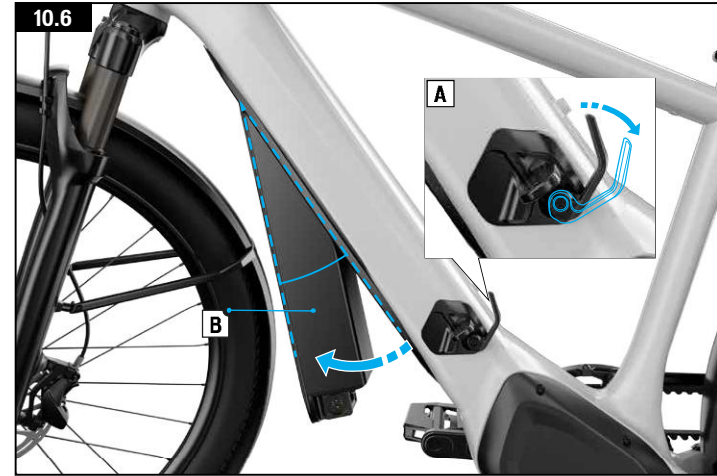


Fig. 10.6

- Supporting the battery with one hand, rotate the latch lever clockwise to fully release the battery (A).
- Rotate the battery down and align the battery roughly 20 degrees with the downtube (B).

UNHOOK THE BATTERY



Fig. 10.7

- To prevent the battery from accidentally falling out of the frame, the battery is secured in the frame with a hook at the front end.
- Lift the battery upwards and rearward to unhook it, then remove it from the frame.

RE-INSTALL THE BATTERY

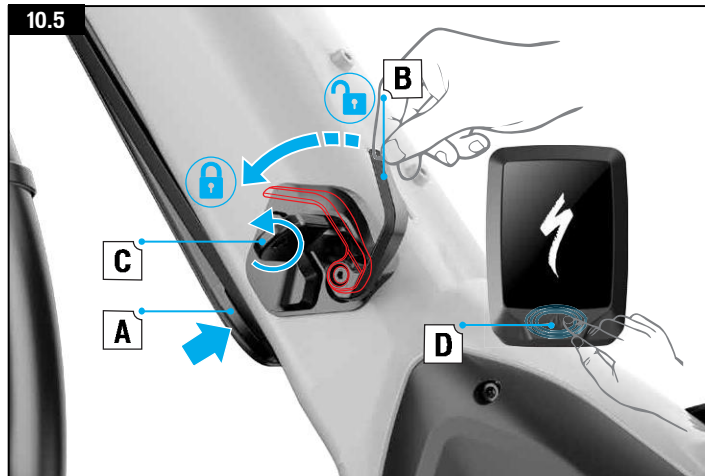


Fig. 10.8

- Re-hook the battery onto the hook (Fig. 10.7) and rotate the battery back into the frame.
- Press the battery slowly into the frame until you hear the first click (A), the battery is then held in the frame, rotate the battery lever counter-clockwise (B) to secure it into the frame.
- Lock the battery latch and remove the key from the frame (C). Do not ride the bicycle with the key inserted into the lock mechanism.
- Power on the TCD_w 2 to check the connection (D).



INFO: Be sure to keep the key code supplied with your bicycle readily available. If the locking key is lost and the code is not available, the entire lock mechanism will need to be replaced.

10.4. CLEANING

- Always turn the battery off and remove the charger from the charge port and wall socket before cleaning the bicycle.
- Make sure the charge port is properly closed before washing. Ensure no water comes into contact with the electrical components while washing.
- Make sure the charge port is free from water and/or dirt. The port should be clean before use. Blow out the contamination with low air pressure, or use a soft brush to remove dry contamination.
- If wet, leave the charge port open to dry completely before connecting the charger.



WARNING! Do not use a high-pressure washer or hose to clean your bicycle as it can cause damage to the motor, battery, or other electrical components, potentially resulting in a fire. Do not use or charge a battery you believe had water seep inside. Likewise, all connectors must be completely dry and clean before using or charging the bicycle. Use a clean, damp cloth and bicycle cleaning agents (where appropriate) for cleaning your bicycle.



CAUTION: For instructions on how to clean drivetrain components, please refer to the drivetrain manufacturer's instructions. Make sure connectors are dry and clean before reconnecting and riding. 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. Instead, use a dry or slightly damp cloth.

10.5. STORAGE



CAUTION: If the bicycle is not being used for an extended period, store it in a dry, well-ventilated area. Only store the battery at an ambient temperature between -20° & 60° (-4 & +140 °F)



CAUTION: If the Bicycle is stored and not in use for extended periods of time, be sure to charge the battery at least every three months so there is at least a 60% charge level. If the battery is not charged over a period longer than three months, it can cause damage to the battery.



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

10.6. TRANSPORT



INFO: Transporting and/or shipping your Vado battery may be subject to certain restrictions and may require special handling, labeling, 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, Specialized recommends using an approved battery transport box.

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

10.7. DISPOSAL



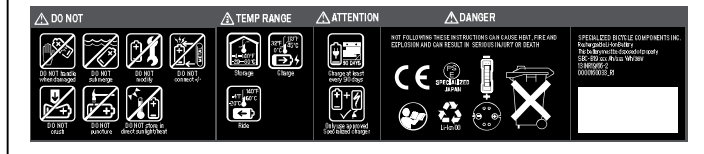
Batteries and chargers must not be disposed of in your household trash! All batteries and chargers must be disposed of in an environmentally friendly manner, in accordance with the battery disposal regulations in your country or state. Ask your Authorized Specialized Retailer for information about how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

10.8. BATTERY TECHNICAL DATA

DESCRIPTION	UNIT	SPECIFICATION	
		SBC - B19	SBC - B20
OPERATING VOLTAGE	V	36	36
CHARGING TEMPERATURE	°C	0 – +45	0 – +45
	°F	32 – +113	32 – +113
OPERATING TEMPERATURE	°C	-20 – +60	-20 – +60
	°F	-4 – +140	-4 – +140
STORAGE TEMPERATURE (Within 1 month)	°C	-20 – +60	-20 – +60
	°F	-4 – +140	-4 – +140
STORAGE TEMPERATURE (Within 3 Months)	°C	-20 – +45	-20 – +45
	°F	-4 – +113	-4 – +113
STORAGE TEMPERATURE (Within 1 year)	°C	-20 – +23	-20 – +23
	°F	-4 – +73.4	-4 – +73.4
DEGREE OF PROTECTION		IPX6	IPX6
WEIGHT	Kg	3.1	3.85
	Lb	6.8	8.5
RATED CAPACITY	Ah	14.7	19.6
ENERGY	Wh	530	710
CHARGE TIME	H	4	5

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” for additional information about battery range and tips on maximizing range.

10.9



WARNING! Fig. 10.9 is a copy of the battery label which is supplied with your bicycle, familiarize yourself with the information before first use.

10.9. CHARGER TECHNICAL DATA

DESCRIPTION	UNIT	SPECIFICATION		
CHARGER MODEL NUMBER		SBC-C04	SBC-C05	SBC-C07
CHARGING TEMPERATURE	°C	0 – +40	0 – +40	-10 – +40
	°F	+32 – +104	+32 – +104	14 – +104
STORAGE TEMPERATURE	°C	-20 – +65	-20 – +65	-20 – +70
	°F	-4 – +149	-4 – +149	-4 – +158
OPERATING VOLTAGE	V	42	42	42
AC INPUT VOLTAGE	V	100-240	100-240	207-264
FREQUENCY	Hz	50 / 60	50 / 60	47 / 63
MAX CHARGE CURRENT	A	4	2	4
DIMENSIONS	MM	177 x 78 x 38.5	177 x 78 x 38.5	180 x 86 x 52

11. SPECIFICATIONS

11.1. GENERAL SPECIFICATIONS

DESCRIPTION	SPECIFICATION
HEADSET BEARING	11/8" UPPER / 1.5" LOWER
SEAT COLLAR DIAMETER	34.9 mm
SEATPOST DIAMETER	30.9 mm
DERAILLEUR HANGER*	AMAZINGER 2.1, MTB RD HANGER
BELT	GATES CARBON DRIVE 11M-122T-12CT BELT CDX 122T BLACK

* Non-enviolo equipped models only

11.2. TOOLS REQUIRED

2.5, 3, 4, 5, 6, 8 mm ALLEN (Hex) KEYS	GREASE
TORX T10, T20, T25, T30 DRIVER	CASSETTE LOCK RING TOOL
13 mm SOCKET WRENCH	THREAD LOCKER COMPOUND
15 mm OPEN WRENCH	

11.3. BOLT SIZE / TOOLS / TORQUE SPECIFICATIONS



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, an 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 manual:

LOCATION	TOOL	TORQUE	
		NM	IN-LBF
SEAT COLLAR	4 mm Hex	6.2	55
SEATPOST RAIL CLAMP BOLTS	5 mm Hex	NA	NA
STEM @ STEERER TUBE	4 mm Hex	6	52
STEM @ HANDLEBAR	4 mm Hex	6	52
STEM @ STEERER TUBE***	4 mm Hex	5.2	46
STEM @ HANDLEBAR ***	4 mm Hex	5.2	46
STEM TOP CAP BOLT ***	5 mm Hex	NA	NA
CRANK BOLTS	8 mm Hex	50	443
CHAINRING BOLTS	5 mm Hex	10	89
WATER BOTTLE CAGE BOLT	3 mm Hex	2.8	25
12 mm REAR AXLE *	6 mm Hex	15	133
ENVILO AXLE NUTS **	15 mm WRENCH	30 - 40	265 - 354
DERAILLEUR HANGER *	4 mm Hex	6.2	55
HEAD TUBE ICR GUIDE SCREW	TX10	0.8	7
MOTOR MOUNT NUTS	13 mm SOCKET WRENCH	23	203
MOTOR MOUNTING BOLT	5 mm Hex	23	203
MOTOR COVER CUSTOM NUT	TX20	1	8.8
REAR DROP OUT COVER BOLT	2.5 mm Hex	1	8.8

ADJUSTABLE DROPOUT MOUNTING BOLTS	TX30	13	115
ADJUSTABLE DROPOUT ADJUSTMENT BOLTS	3 mm Hex	NA	NA
DROPOUT COUPLER BOLTS	TX25	4	35
BATTERY LATCH BOLT	3 mm Hex	3	26.5
BATTERY (SEAL) MOUNTING BOLTS	TX20	3.3	29
SPEED SENSOR MOUNTING BOLT	3 mm Hex	1	9
SPEED SENSOR MAGNET BOLTS (6 BOLT VERSION)	T25 TORX	6.2	55
SPEED SENSOR MAGNET (CENTERLOCK VERSION)	CASSETTE LOCK RING TOOL	40	354
REMOTE SET SCREW	2 mm Hex	0.8	7
CHAIN GUARD MOUNT BOLT (@MOTOR/ CHAINSTAY)	3 mm Hex	4.5	40
CHAIN GUARD BOLTS	3 mm Hex	3	2.65
KICKSTAND BOLTS	5 mm Hex	10	89
FRONT FENDER MOUNT BOLTS	4 mm Hex	4	35
REAR FENDER BOLTS	4 mm Hex	4	35
REAR RACK BOLTS	5 mm Hex	9	80
HEADTUBE RACK MOUNT COVER PLATE SCREW	2.5 mm Hex	1	8.8

** enviolo equipped models

*** L1e_B models



INFO: For all non-Specialized components, please refer to the manufacturer's manuals for tools and torque settings.

11.4. CUSTOMIZATION

The Vado bicycle, as originally specified, is approved as a Pedelec or an L1e-B S-Pedelec. If you change components on an L1e-B, it may no longer be in compliance with your local regulatory authority.



WARNING! Vado bicycles are supplied with a suspension fork which was selected, tuned, and approved for the frame. The use of different aftermarket forks (less or more travel or a different style of fork), much like is the case with any aftermarket parts, may negatively impact geometry and/or ride quality, and, in some circumstances, may result in a catastrophic failure of the frame or its components. Please check with your Authorized Specialized Retailer or suspension manufacturer regarding aftermarket fork compatibility.

CAUTION: Certain chain rings may not have adequate clearance with the chainstay. Verify spacing and chain line before using it.

11.5. 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.



TECH TIP: Because of the extra weight of the Vado, as a rule of thumb, tire pressure should generally be higher compared to a regular bicycle.

12. DRIVETRAIN WITH ENVIOLIO HUB



Fig. 12.1 (A-B)

Some Vado models are equipped with the enviolo internal geared hub. Depending on the model, the bike is equipped with either a manual hub interface (A) or the AUTOMATIQT hub interface (B), which is integrated into the Vado system displaying the essential information on the TCD_w 2.

AUTOMATIQT Bicycles:

The enviolo stepless automatic technology takes the ride experience to the next level with its 'set it and forget it' approach.

Cyclists only need to set up their desired cadence, and the stepless automatic technology will adjust the enviolo system so that they can always pedal at the same pace, up or downhill.

NOTE: Technical limitations apply and the gear ratio is eventually limited depending on rider preference, terrain or cadence.



INFO: For information on maintenance and usage of the enviolo IGH and the Gates Carbon Drive™ belts, visit the manufacturer's website.



INFO: Non-enviolo IGH equipped Vado models are not compatible with an enviolo IGH.



WARNING! Due to the high degree of complexity of the IGH, proper assembly of the hub requires a high degree of mechanical ability, skill, training, and specialty tools. Therefore, it is essential that the assembly, maintenance, and troubleshooting be performed by an Authorized Specialized Retailer.

12.1. REMOVING AND RE-INSTALLING THE ENVIOLIO EQUIPPED REAR WHEEL

REMOVE THE REAR WHEEL (ENVIOLIO AUTOMATIQT IGH).

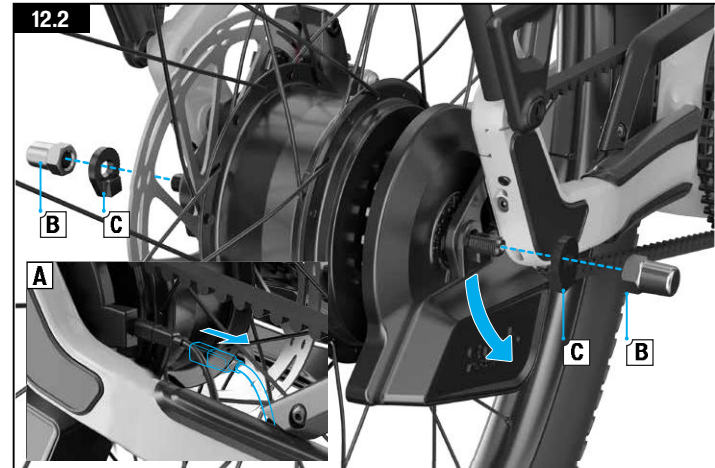


Fig. 12.2

Unplug the cable from the enviolo AUTOMATIQT hub interface (A).

- Remove both the rear axle nuts (B) and non-turn washers (C) using a 15 mm wrench.
- Remove the wheel from the dropouts and remove the belt from the sprocket.

REMOVE THE REAR WHEEL (ENVIOLIO MANUAL IGH)

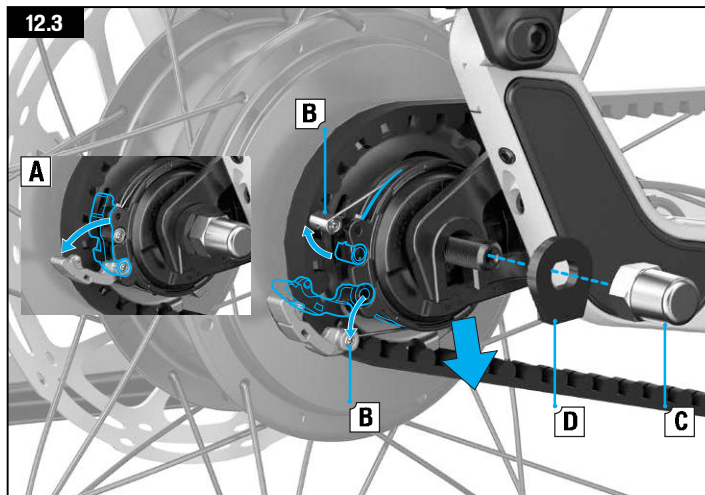


Fig. 12.3

- Flip the hub interface lever into the open position (A) and remove the lever and the barrel out of the interface hooks (B).
- Remove both the rear axle nuts (C) and non-turn washers (D) using a 15 mm wrench.
- Remove the wheel from the dropouts and remove the belt from the sprocket.



INFO: See section 12.3 for the removal of the belt from the frame.

INSTALL THE REAR WHEEL

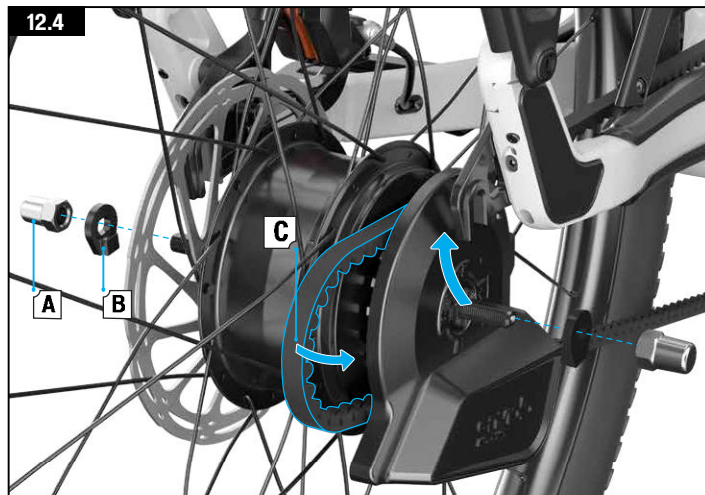


Fig. 12.4

- If not already done, remove the rear axle nuts (A) and non-turn washers (B) from the axle and hold the rear wheel up close to the dropout area.
- Place the belt over the hub interface and onto the sprocket (C).
- Place the rear wheel into the dropout.



NOTE: Make sure that neither the AUTOMATIq connector nor the cable is crushed or kinked.



TECH TIP: In some cases, it is helpful to remove the chain/belt from the front chaining to simplify the assembly of the rear wheel.

INSTALL THE REAR WHEEL AXLE NUTS

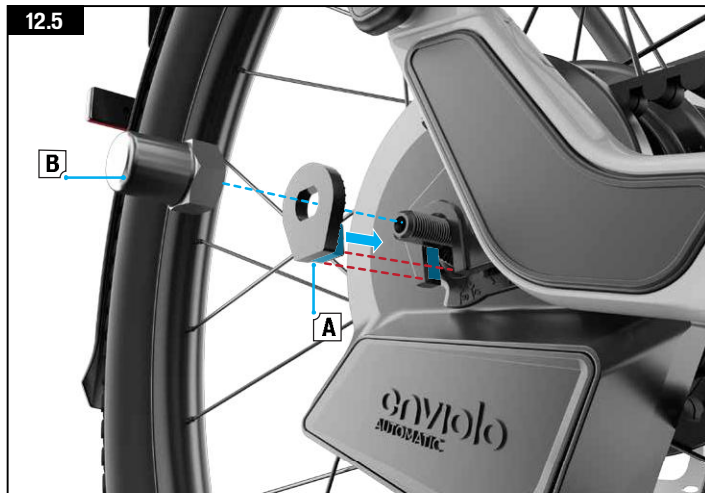


Fig. 12.5

- Install a non-turn washer (A) on each side. The profiled side of the non-turn Washer must be aligned towards the frame. The anti-twist device must be located in the dropout.
- Install the axle nuts (B) and torque them with a 15 mm wrench to 30-40 Nm.

INSTALL THE ENVILO INTERFACE

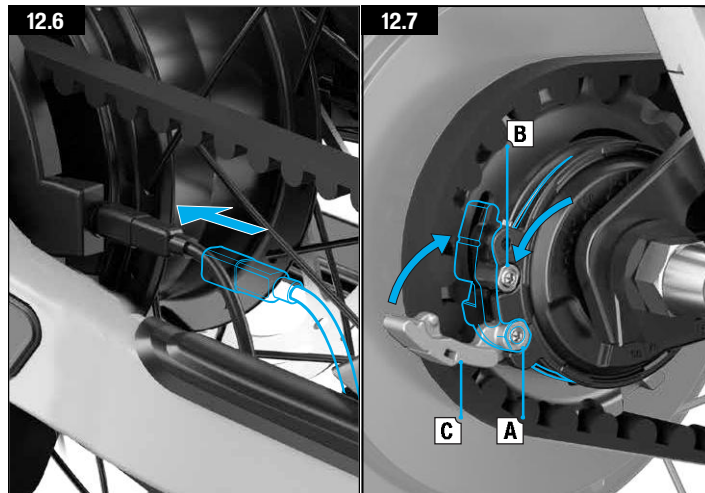


Fig. 12.6 ENVILO AUTOMATIQ IGH

- Plug the cable into the enviolo AUTOMATIq hub interface (C).
- Check the function on the remote and TCD_w 2 to make sure the hub is connected.

Fig. 12.7 ENVILO MANUAL IGH

- Re-insert the manual hub interface lever (A) and barrel (B) into their respective hooks.
- Flip the lever into the closed position (C).

12.2. DRIVETRAIN TENSIONING AND REAR WHEEL ALIGNMENT

Your bicycle is equipped with a Gates Carbon Drive™ belt. For more information on correct installation, use, and maintenance of the belt, please refer to the manufacturer's website for details.



CAUTION: When handling the belt, do not crimp, twist, back-bend, invert, bundle, or zip tie the belt. Do not use the belt as a strap wrench or chain whip. Do not roll on or pry on the belt. Never use any belt that shows signs of damage.

The Vado is designed with an adjustable sliding dropout which simultaneously allows for easy tensioning of the belt/chain and alignment of the rear wheel.

To adjust the tension of the belt you will need to move the adjustable sliding dropout until the correct tension is achieved. Mirror the adjustments to the adjustable sliding dropout on both sides of the rear axle.

REMOVE THE DROPOUT COVERS

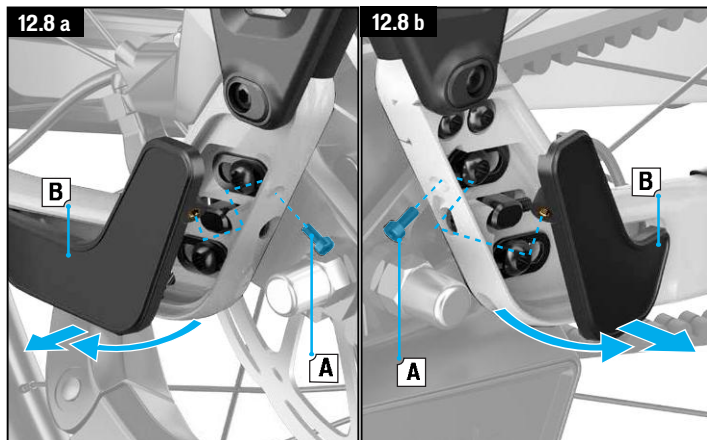


Fig 12.8 A & B

- To access the adjustment bolts you will need to remove the covers located on the rear dropout.
- Using a 3 mm hex key, remove both bolts from the rear of the left and right dropouts (A).
- Use a flat head screwdriver to lift the covers, then rotate the covers forward towards the front of the bike and remove them (B).



CAUTION: Do not force the cover open as this will damage the molded clips on the covers.

SLIDING DROPOUT SPECS

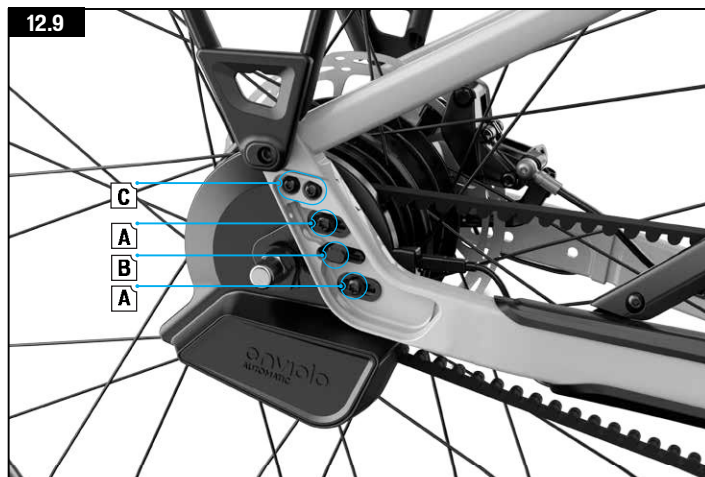


Fig 12.9

- A: Tensioning bolts, TX30
- B: Adjustable slide bolt, 3 mm hex key
- C: Seatstay coupler Bolt, TX 25

ADJUST THE SLIDING DROPOUT

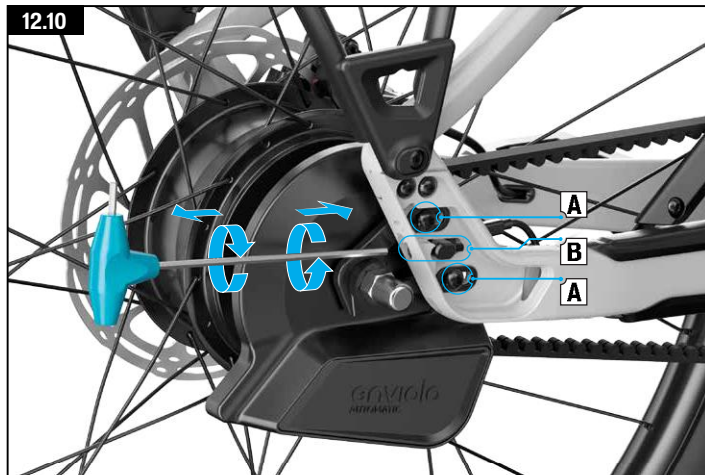


Fig 12.10

- Loosen the sliding dropout locking bolts on both left and right rear dropouts (A).
- Starting on the drive side (right), use a 3 mm hex key to tighten or loosen the adjuster bolt to achieve the correct belt tension (B).

ALIGN THE REAR WHEEL

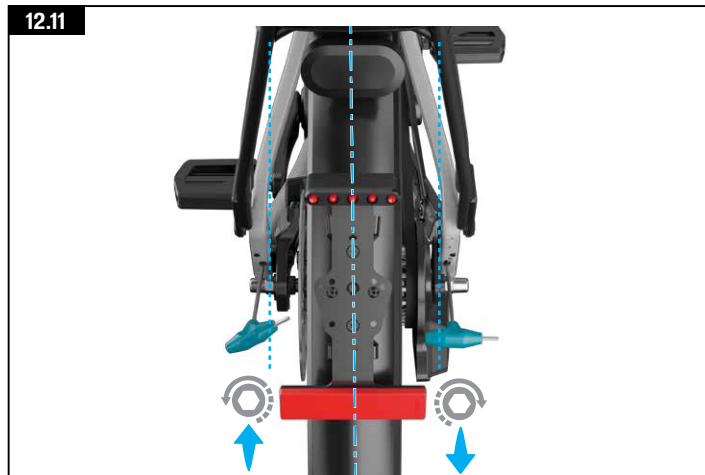


Fig 12.11

- Adjust the non-drive side adjuster bolt until the wheel is properly centered between the chainstays.
- Double-check the belt tension is still accurate and adjust if necessary.
- Once the correct tension and alignment are achieved, torque the locking bolts to 9 Nm / 80 in-lbf with a TX 30 wrench.



INFO: Proper belt tension is important. Too little tension can lead to tooth jump or skipping. Too much tension can cause wear and damage. There are several tools to ensure the best tension and the smoothest ride. For more information on belt installation, use, and maintenance, please refer to the manufacturer's website.



WARNING! Due to the complexity of the belt tensioning, a high degree of mechanical expertise, skill, training, and specialty tools are needed. The service of the belt should be performed by an Authorized Specialized Retailer.

12.3. SEATSTAY COUPLER

The Vado is equipped with a seatstay coupler which creates a gap in the frame so that a belt can be easily installed or removed.

Remove the rear wheel and remove the belt from the rear sprocket (section 12.1).

Remove the bolts of the rear rack from the seatstay with a 4 mm hex key (fig 7.4).

REMOVE THE CHAIN/BELT GUARD

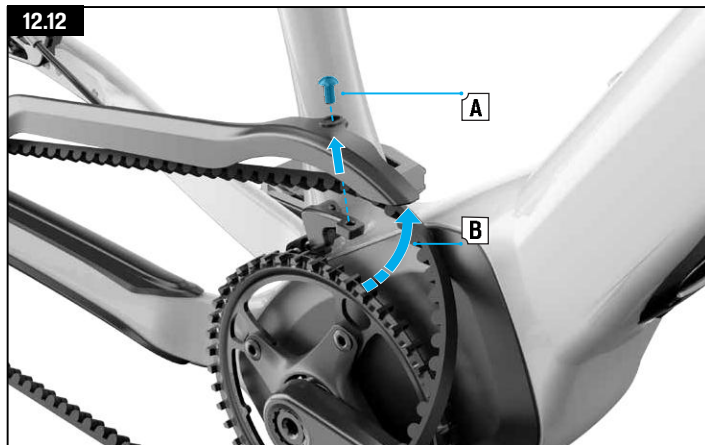


Fig. 12.12

- Remove the front chain guard bolt from the top of the chain guard using a 3 mm hex key (A).
- Lift the chain guard up and then slide the belt between the chain guard and the frame (B).

OPEN THE COUPLER AND REMOVE THE BELT

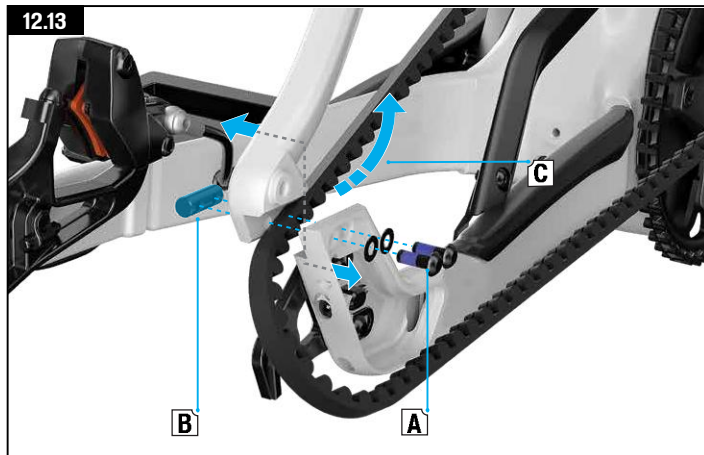


Fig 12.13

- Remove the adjustable drop out covers (fig.12.8 A-B)
- Using a TX25 wrench, remove the upper seatstay coupler bolts (A) and the seatstay coupler barrel (B) from the dropout.
- Pull the chainstay and seatstay apart and slide the belt carefully through the gap in the seatstay (C).
- Reverse the steps to install a new belt.
- Using a TX25 wrench, torque the coupler bolts to 9 Nm / 80 in-lbf.
- Replace the rear rack onto the seatstay. Using a 4 mm hex key, torque the coupler bolts to 9 Nm / 80 in-lbf.



CAUTION: Install and torque the seatstay coupler to specification before tensioning the belt.

12.4. ENVIOLLO AUTOMATIQU IGH CALIBRATION

On the first setup or after system maintenance or incorrect functionality the system has to be calibrated. The first setup calibration should be completed by your Authorized Specialized Retailer before handing over the bicycle. If this was not done, instructions will automatically be displayed on the TCD_w 2 before you can ride the bike for the first time. Simply follow the on-screen guide to calibrate the bicycle yourself.



CAUTION: After system maintenance or incorrect functionality the system has to be re-calibrated.

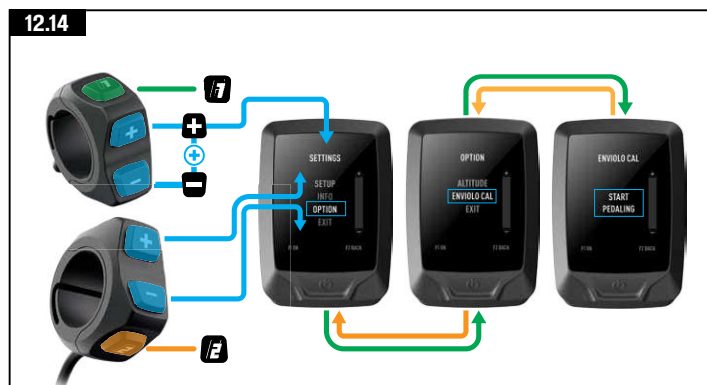


Fig. 12.14

You can re-calibrate your bicycle at any stage by selecting enviollo calibration in the settings.

- Dual Press the (+)(-) button on the remote to access the settings menu.
- Using (+)(-) buttons, select OPTION on the menu, press F1 to select.
- Using (+)(-) buttons, select ENVIOLLO CAL on the menu, press F1 to select.
- Follow the on-screen Guide.

13. REPLACING PARTS ON YOUR L1e-B S-PEDELEC

The Vado bicycle, as originally spec'd, is approved as a Pedelec or an L1e-B S-Pedelec. If you change components on an L1e-B, it may no longer be in compliance with 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.

L1e-B ONLY: The following parts are type approved and need to carry an e-mark:

Lights	Rearview mirror	Retro reflectors
Horn		

PEDELEC AND L1e-B 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	Handlebar
Sensors	Rear rack	Stem
Saddle	Seatpost	Pedals
Chainrings	Cassette	Kickstand

The following parts do not require type approval:

Chain	Wheels	Tubes
Derailleurs	Hubs	Headset
Shifters	Tires (if ETRTO is followed)	Grips
Shifting cables	Rim tapes	
Shifting housings	Spokes	

14. REGULATORY STATEMENTS

RoHS:

Specialized Bicycle Components, Inc. Certifies that this product and its packaging are in compliance with European Union Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronics Equipment, commonly known as RoHS.

FCC Statement:

This device complies with Part 15 of the FCC Rules.

Caution: If any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

The RF Exposure Compliance distance is 20 millimeters.

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.

ISED Statement

This device complies with Innovation, Science and Economic Development Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. CAN ICES-3(B)/NMB-3(B)

The device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 millimeters between the radiator and your body.

RoHS :

Specialized Bicycle Components, Inc. certifie que ce produit et son emballage sont conformes à la directive de l'Union européenne 2011/65/EU relative à la limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques, communément appelée directive RoHS.

Déclaration de la FCC :

Cet appareil est conforme aux dispositions de l'article 15 de la réglementation de la FCC.

Attention: tout changement ou toute modification non expressément approuvé(e) par la partie responsable de cette conformité pourrait annuler l'autorisation de l'utilisateur à faire fonctionner cet appareil.

Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférences nuisibles et (2) cet appareil doit accepter toute interférence reçue, y compris les interférences pouvant entraîner un fonctionnement non désiré.

Ce bénéficiaire n'est nullement responsable des changements ou modifications qui ne sont pas expressément approuvé(e)s par la partie responsable de la conformité. De telles modifications pourraient annuler l'autorisation de l'utilisateur à faire fonctionner cet appareil.

La distance réglementaire de l'exposition aux RF est de 20 millimètres.

REMARQUE: cet appareil a été testé et reconnu conforme aux normes applicables aux

appareils numériques de Classe B, en vertu de l'article 15 de la réglementation de la FCC. Ces normes sont destinées à fournir aux installations domestiques une protection raisonnable contre les interférences nuisibles. Cet appareil génère, utilise et peut diffuser des ondes radio. En cas d'installation ou d'utilisation non conforme aux instructions, il peut causer des interférences nuisibles aux communications par ondes radio. Toutefois, rien ne peut garantir l'absence d'interférences dans une installation donnée. Si cet appareil crée des interférences nuisibles à la réception de la radio ou de la télévision, ce qui peut être déterminé en éteignant puis en rallumant l'appareil, nous recommandons à l'utilisateur d'essayer de corriger ces interférences grâce à au moins une des procédures suivantes :

- Réorienter ou déplacer l'antenne de réception.
- Augmenter la distance entre l'appareil et le récepteur.
- Brancher l'appareil sur une prise électrique d'un circuit différent de celui sur lequel le récepteur est branché.
- Consulter un revendeur ou un technicien radio/TV compétent si nécessaire.

Déclaration de l'ISED

Cet appareil est conforme aux réglementations RSS de l'Innovation, Science et Développement économique, Canada. Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférences et (2) cet appareil doit accepter toute interférence, y compris les interférences pouvant entraîner un fonctionnement non désiré de l'appareil. CAN ICES-3(B)/NMB-3(B)

Ce dispositif respecte l'exemption d'évaluation de routine des limitations de la section 2.5 de la RSS 102 et la conformité à l'exposition aux RF de la RSS-102. Les utilisateurs peuvent obtenir des informations relatives à l'exposition et la conformité aux RF pour le Canada.

Cet émetteur ne doit pas être installé ou utilisé en conjonction avec d'autres antennes ou autres émetteurs. Cet appareil ne doit pas être installé et utilisé à moins de 20 millimètres de distance entre le radiateur et votre corps.

NCC警示語:

商標: Specialized

產品名稱: TCDw2

型號: SBC-D08

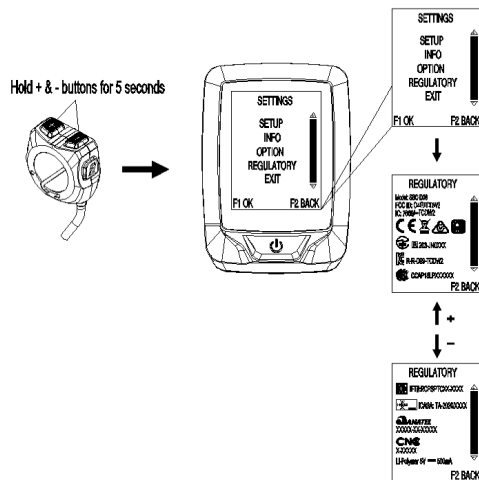
取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。


前述合法通信，指依電信管理法規定作業之無線電通信。

低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

How to check regulation information / marks on screen:



15. 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 Power Assisted Cycle)	Li-ion Battery Charger
Model designation:	Vado 3.0 / Vado 3.0 IGH / Vado 4.0 / Vado 5.0 / Vado 5.0 IGH	SBC-C04 / SBC-C05 / SBC-C07
Comply with all of the relevant requirements of the directives:	Machines (2006/42/EC). Electromagnetic Compatibility (2004/108/EC). Radio Equipment (2014/53/EU)	Low Voltage (2014/35/EC)
The following harmonizing norms were applied to the product:	EN 15194:2017 Cycles - Electrically power assisted cycles - EPAC Bicycles	EN 60335-1 Household and similar electrical appliances - safety EN 60335-2-29 Safety of household and similar appliances Part 1: General requirements Part 2: Particular requirements for battery chargers
Serial number:	Frame decal adhered to the back page of the user manual	
Technical documentation by:	Specialized Europe GmbH Werkstattgasse 10 6330 Cham, Switzerland	
Signature: 		Jan Talavasek (Sr. Director Turbo)
Specialized Europe GmbH, 6330 Cham, Switzerland, April 1st, 2020		

NOTE: THIS DECLARATION OF CONFORMITY APPLIES ONLY TO BICYCLES SOLD IN COUNTRIES FOLLOWING THE CE MARKING DIRECTIVES.

NOTE: IN ORDER TO CONNECT THE BICYCLE AND THIS USER MANUAL TOGETHER, THE YELLOW SERIAL NUMBER DECAL LOCATED ON THE FRAME OF THE BICYCLE MUST BE PLACED OVER THE FACSIMILE OF THE DECAL ON THE BACK PAGE OF THIS USER MANUAL.