Varstrom 125XVH-500

Varstrom 48V 500W Ebike Hub Motor Conversion Kit User Manual

Model: 125XVH-500

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your Varstrom 48V 500W Ebike Hub Motor Conversion Kit. Please read this manual thoroughly before attempting installation or operation to ensure proper function and safety. This kit is designed to convert a standard pedal bicycle into an electric bicycle, offering enhanced performance and efficiency.

2. Safety Information

Always prioritize safety when working with electrical components and bicycles. Failure to follow safety guidelines can result in serious injury or damage to the product.

- **Professional Installation Recommended:** If you are unsure about any step, seek assistance from a qualified bicycle mechanic or ebike specialist.
- **Power Disconnection:** Always disconnect the battery before performing any installation, maintenance, or troubleshooting.
- **Electrical Safety:** Avoid exposing electrical components to water or extreme moisture. Ensure all connections are secure and properly insulated.
- **Brake Check:** After installation, thoroughly test your bicycle's brakes to ensure they are functioning correctly.
- **Helmet Use:** Always wear a helmet and appropriate safety gear when riding an ebike.
- **Local Regulations:** Be aware of and comply with all local laws and regulations regarding ebike usage, speed limits, and power output.
- **Battery Handling:** Handle the battery with care. Do not puncture, short-circuit, or expose it to extreme temperatures. Use only the charger provided or recommended by Varstrom.

3. Package Contents

Verify that all components listed below are present in your package. If any items are missing or damaged, contact your seller immediately.

Figure 3.1: Varstrom Ebike Conversion Kit Package Contents

- Rear Wheel & Hub Motor (Pre-assembled)
- Controller
- Brake Lever or Hydraulic Brake Sensor (Optional)
- Thumb Throttle
- Controller Case
- Varstrom LCD Display (Optional)
- Battery (Optional)
- Extension Cable
- PAS (Pedal Assist Sensor)
- 1T4 Cable
- Headlight
- Plastic Straps
- Sticker (Motor Specification Label)

4. Product Overview and Specifications

The Varstrom 48V 500W Ebike Hub Motor Conversion Kit provides a powerful and efficient solution for electrifying your bicycle. It features a brushless gear drive motor, various display options, and compatibility with different bicycle types.

4.1. Key Components

Figure 4.1: Main Components of the Conversion Kit

- **Hub Motor:** 48V 500W brushless gear drive motor, available for front or rear wheel installation. Features helical nylon gears for durability and quiet operation.
- **Controller:** Manages power delivery to the motor. Max current 22A/30A.
- **Display:** Optional LCD displays (VD03, EKD01, VD04) provide ride data, PAS level control, and optional features like remote locking/unlocking and navigation.
- **PAS Sensor:** Pedal Assist Sensor detects pedaling motion to provide motor assistance.
- **Throttle:** Provides on-demand power assistance.
- **Brake Levers/Sensors:** Cut off motor power when brakes are applied for safety.

4.2. Motor Specifications

VARSTROM Hub Motor Specifications

95EVH 36V250W Rear Hub Motor	125EVH 48V500W Front Hub Motor	125EVH 48V500W Rear Hub Motor	125XVH 48V500W Rear Hub Motor	125XVH 48V750W Rear Hub Motor
Standard Version	Standard Version	Standard Version	Performance Version	Performance Version

Motor Type	Gear Drive Brushless Motor				
Rated Power	250W	500W	500W	500W	750W
Peak Power	500W	800W	800W	864W	1056W
Rated Voltage	36V	48V	48V	48V	48V
Max Speed	25-31KM/h	40-45KM/h	40-45KM/h	45-50KM/h	55-60KM/h
Max Torque	45N.m	65N.m	65N.m	65N.m	80N.m
Efficiency	≥78%	≥78%	≥78%	≥80%	≥80%
Compatible Size	135-145mm Rear Dropout	100mm Front Dropout	135-145mm Rear Dropout	135-145mm Rear Dropout	135-145mm Rear Dropout
Brake Type	Disc Brake / V Brake				
Spoke Type	12G * 36H				
Cassette Type	≤10-Speed Cassette				
Noise Grade	＜60dB				
Waterproof	IPX5				
Certification	CE / RoHS / REACH				

Figure 4.2: Varstrom Hub Motor Specifications Overview

Figure 4.3: 125XVH Rear Hub Motor (Performance Version) Specifications

Table 4.1: General Motor Specifications (Model 125XVH-500)

Specification	Value
Motor Type	Gear Drive Brushless Motor
Rated Power	500 Watts
Peak Power	864 Watts
Rated Voltage	48 Volts (DC)
Max Speed	45-50 KM/H (approx. 31 MPH)
Max Torque	65 N.m
Efficiency	≥80%
Compatible Dropout Size	135-145mm Rear Dropout
Brake Type Compatibility	Disc Brake / V Brake

Specification	Value
Cassette Type	≤10-Speed Cassette
Noise Grade	<60dB
Waterproof Rating	IPX5
Operation Temperature	-20°C ~ 45°C

4.3. Battery Specifications (Optional)

If your kit includes a battery, refer to the following specifications. Note that battery models and capacities may vary.

Battery Model	Downtube Battery 36V 15.6Ah	Downtube Battery 48V 13Ah	Downtube Battery 48V 16Ah	G80 Downtube Battery 48V 19.2Ah	G80 Downtube Battery 48V 20Ah	VoltzX Battery 48V 20Ah	YingWu Battery 52V 20Ah	Rear Rack Battery 48V 17.5Ah
Battery Cell	18650 2600mAh	18650 2600mAh	18650 3200mAh	L*/G 21700 4800mAh	Sam*/sung 21700 5000mAh	Sam*/sung 21700 5000mAh	Sam*/sung 21700 5000mAh	18650 2600mAh
BMS Max Protection Current	30A	30A	30A	30A	30A	30A	30A	30A
USB Port	✓	✓	✓	✓	✓	✓ USB/TYPE-C	✗	✓
Weight	3.9kg	4.25kg	4.23kg	4.95kg	4.7kg	5.2kg	5kg	6kg
Cycle Life	1000 times	1000 times	1000 times	1000 times	1000 times	1000 times	1000 times	1000 times
Battery Charger	✓	✓	✓	✓	✓	✓	✓	✓

Figure 4.4: Varstrom Ebike Battery Specifications

4.4. Display Options

Figure 4.5: Varstrom Display Options (VD03, EKD01, VD04)

The kit may come with one of the following display options, each offering different features:

- **VD03 Display:** 1.5" LCD screen, 9 PAS levels, IP67 waterproof, English language support.
- **EKD01 Display:** 2.4" TFT screen, 9 PAS levels, IP67 waterproof, navigation function, multi-language support, remote locking/unlocking via app.
- **VD04 Display:** 3.5" IPS screen, 9 PAS levels, IP67 waterproof, navigation function, multi-language support, remote locking/unlocking via app.

5. Installation Guide

Careful installation is crucial for the safe and reliable operation of your ebike kit. Follow these steps sequentially.

5.1. Pre-Installation Checks

- **Bicycle Compatibility:** Ensure your bicycle frame has the correct dropout spacing (135-145mm for rear hub motor, 100mm for front hub motor).
- **Wheel Size:** Confirm the wheel size of your kit matches your bicycle (20", 26", 27.5", or 700C).

Figure 5.1: Dropout and Brake Compatibility

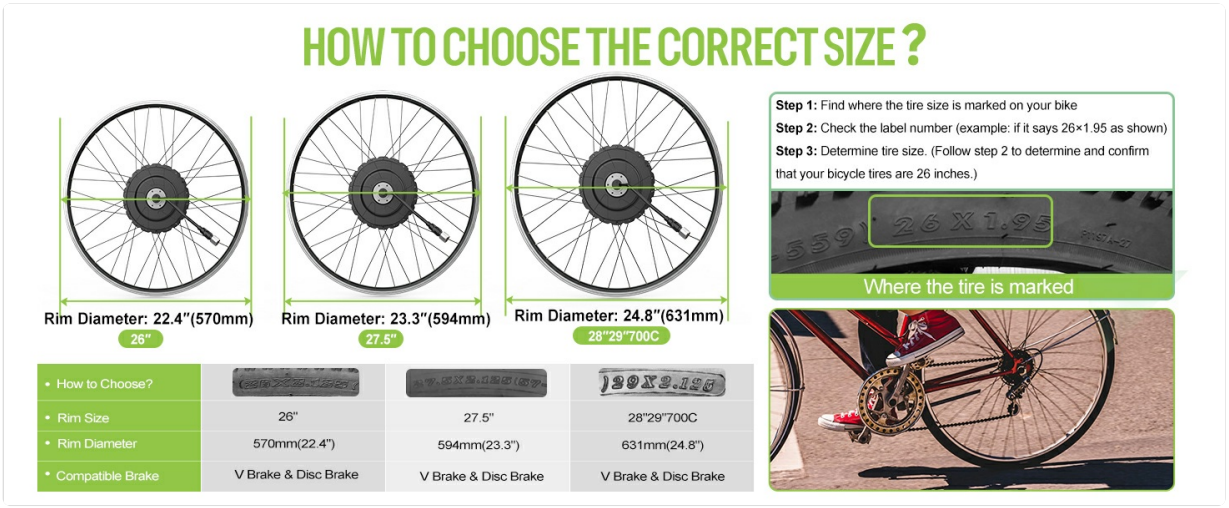

Figure 5.2: How to Choose the Correct Wheel Size

5.2. Motor Wheel Installation

1. Remove your existing bicycle wheel.
2. Install the new motor wheel into the appropriate dropout (front or rear). Ensure the motor cable exits towards the frame.
3. Secure the wheel with axle nuts, ensuring it is centered and tight.
4. If using disc brakes, install the disc rotor onto the motor hub. If using V-brakes, ensure the rim is properly aligned.

5.3. Controller Mounting

Mount the controller in a secure, protected location on your bike frame, typically using the provided controller case and plastic straps. Ensure it is away from moving parts and potential water splashes.

5.4. Wiring Connections

Refer to the wiring diagram below for connecting all components to the controller. Ensure all connectors are firmly seated and waterproofed where applicable.

Figure 5.3: Easy Installation Wiring Diagram

- Connect the motor cable to the controller.

- Install the PAS sensor on the left side of the bottom bracket. Ensure the sensor and magnet disc are correctly aligned and spaced. Connect the PAS sensor cable to the controller.
- Mount the thumb throttle on the handlebar and connect its cable to the controller.
- Install the brake levers (or brake sensors) on the handlebars and connect their cables to the controller.
- Mount the display on the handlebar and connect its cable to the controller.
- Connect the headlight to the designated port on the controller or 1T4 cable.
- If using an optional battery, connect it to the controller.

5.5. Cable Management

Use the provided plastic straps to neatly secure all cables along the bicycle frame. Ensure cables do not interfere with steering, braking, or pedaling, and are protected from moving parts.

6. Operating Instructions

Familiarize yourself with the operation of your new ebike system before riding.

6.1. Powering On/Off

To power on the system, press and hold the power button on your display. To power off, press and hold the power button again.

6.2. Pedal Assist System (PAS)

The PAS system provides motor assistance based on your pedaling. Use the '+' and '-' buttons on your display to adjust the PAS level. Higher levels provide more assistance.

6.3. Throttle Operation

The thumb throttle provides instant motor power, allowing you to ride without pedaling. Use it cautiously, especially when starting from a standstill.

6.4. Display Functions

Your display provides important information and control over your ebike system. Functions may vary slightly depending on your specific display model (VD03, EKD01, VD04).

- **Speed Display:** Current speed, average speed, max speed.
- **Battery Level:** Indicates remaining battery charge.
- **PAS Level Indicator:** Shows the current pedal assist level.
- **Odometer/Trip Distance:** Tracks total distance or trip distance.
- **Headlight Control:** Turn the headlight on/off via the display.
- **Error Codes:** Displays diagnostic codes if a system fault occurs.
- **Quick-Switch 25 km/h Mode:** For compliance with certain road legality requirements, some displays offer a quick switch to limit speed to 25 km/h (typically by holding '+' and '-' buttons together).
- **App Connectivity (EKD01/VD04):** Supports remote locking/unlocking and advanced ride data tracking via the 'BIKEGO+' app.

7. Maintenance

Regular maintenance ensures the longevity and optimal performance of your Varstrom ebike kit.

- **Cleaning:** Regularly clean the motor, controller, and battery with a damp cloth. Avoid high-pressure washing directly on electrical components.
- **Battery Care:** Store the battery in a cool, dry place. Charge it regularly, even if not in use, to maintain battery health. Avoid fully discharging the battery.
- **Wiring Inspection:** Periodically check all cables and connectors for wear, damage, or loose connections. Ensure waterproof connections are sealed.
- **Motor Inspection:** Listen for unusual noises from the motor. Ensure the wheel spins freely when power is off.
- **Brake System:** Regularly inspect and maintain your bicycle's brake system. Ensure brake levers/sensors are functioning correctly to cut motor power.
- **Tire Pressure:** Maintain correct tire pressure for safety and efficiency.

8. Troubleshooting

This section addresses common issues you might encounter. For more complex problems, contact customer support.

Table 8.1: Common Troubleshooting Guide

Problem	Possible Cause	Solution
System does not power on	Battery not charged or connected; Loose wiring; Faulty display/controller	Check battery charge and connection; Inspect all wiring; Contact support if issue persists.
Motor not assisting	PAS sensor misaligned or damaged; Brake levers engaged; Low battery; Faulty motor/controller	Check PAS sensor alignment and connection; Ensure brake levers are not engaged; Charge battery; Contact support.
Display shows error code	Specific component fault	Refer to your display's specific manual for error code meanings or contact support with the code.
Unusual noise from motor	Loose components; Internal motor issue	Check for loose parts; Discontinue use and contact support if noise persists.

9. Warranty and Support

Varstrom products are manufactured to high-quality standards. For warranty information, please refer to the documentation provided with your purchase or contact your seller directly. Keep your proof of purchase for warranty claims.
For technical support or assistance with installation and troubleshooting, please contact the Varstrom customer service team or your authorized dealer. Provide your product model number (125XVH-500) and a detailed description of the issue when seeking support.