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## Varstrom 125EVH, 125XVH

# Varstrom 48V 500W/750W Rear Hub Motor Ebike Conversion Kit

User Manual

## INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your Varstrom 48V 500W/750W Rear Hub Motor Ebike Conversion Kit. This kit is designed to transform a standard bicycle into an electric bike, offering enhanced performance and versatility. Please read this manual thoroughly before installation and use to ensure proper function and safety. The Varstrom hub motor kit is available in two main versions: the Standard Version (125EVH Series) for daily commuting and leisure, and the Performance Version (125XVH Series) for demanding applications like food delivery or tackling steep hills. Both versions offer reliable and efficient power for various riding needs.

## SAFETY INFORMATION

Always prioritize safety when operating your ebike. Failure to follow safety guidelines can result in serious injury or damage to the product.

- Wear a helmet and appropriate safety gear at all times.
- Perform a pre-ride inspection before each use, checking brakes, tires, and all connections.
- Familiarize yourself with local ebike regulations and traffic laws.
- Do not operate the ebike under the influence of alcohol or drugs.
- Ensure all electrical connections are secure and protected from moisture. The motor has an IPX5 waterproof rating, but the controller and display should also be protected.
- Avoid riding in extreme weather conditions or on unsafe terrain.
- Keep hands and feet clear of moving parts, especially the motor and wheel spokes.

## PACKAGE CONTENTS

Your Varstrom Rear Hub Motor Kit includes the following components:

- Pre-laced Rear Wheel with Motor
- Intelligent Controller
- LCD Display (Optional, specific model depends on selection)
- Brake Levers + Thumb Throttle
- PAS Sensor + All Cables & Headlight

Note: Battery is sold separately. A right-side PAS sensor may be required if using a hollow crankset.

## SETUP AND INSTALLATION

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This section guides you through the installation process of your Varstrom hub motor kit. Ensure your bicycle is compatible with the kit's specifications before beginning.

### Compatibility Check

- **Rear Dropout Width:** The kit is designed for bicycles with a rear dropout width of 135-145mm.
- **Brake Systems:** Supports both disc and V-brake systems.
- **Cassette Type:** Compatible with cassette flywheels (not for screw-on freewheels) and works with up to 10-speed gear systems.
- **Wheel Size:** Fits 20", 26", 27.5", and 700C (28"/29") wheels.

### Identifying Your Wheel Size

To ensure you have the correct motor wheel, verify your bicycle's wheel size. This information is typically found on the sidewall of your tire.



• 28" / 29" / 700C



• 27.5"



• 26"



• 20"

• How to Choose?	29x2.125	27.5x2.10	26x2.125	20x1.35/35
• Rim Size	28"/29"/700C	27.5"	26"	20"
• Rim Diameter	630mm(24.8")	600mm(23.6")	570mm(22.4")	420mm(16.5")
• Compatible Tire	700C:32C-50C Width			
	20"/26"/27.5"/28"/29":1.5"-2.4"Width			

## HOW TO CHOOSE SUITABLE WHEEL SIZE?



### Where the tire is marked

**Step 1:** Find where the tire size is marked on your bike

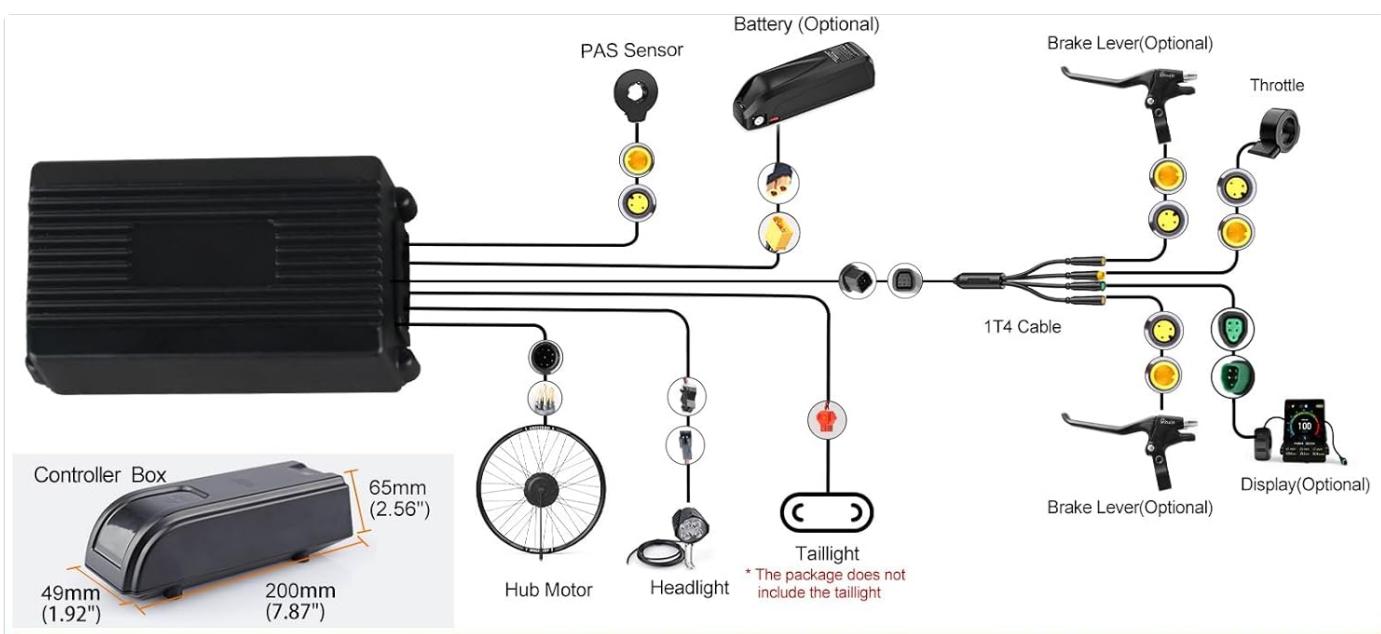
**Step 2:** Check the label number (example: if it says 26x1.95 as shown)

**Step 3:** Determine tire size. (Follow step 2 to determine and confirm that your bicycle tires are 26 inches.)

Image: Guide on how to choose the suitable wheel size by checking tire markings. It shows examples of 29x2.125, 27.5x2.10, 26x2.125, and 20x1.85/36 tire sizes with corresponding rim sizes and diameters.

## Installation Overview

The following diagram illustrates the general connection points for the Varstrom hub motor kit components. A detailed step-by-step guide is recommended for first-time installers.



Controller	DC Rated Voltage	Rated Power	Limit Current	Rated Current	Under-Voltage Protection	Over-Voltage Protection
48V500W	48V	500W	18±1A	9±1A	39±1V	62.4V
48V750W	48V	750W	22±1A	11±1A	39±1V	62.4V



Image: Exploded diagram showing the various components of the eBike conversion kit and their connections. Key components include the hub motor, controller box, PAS sensor, battery (optional), brake levers, thumb throttle, 1T4 cable, display (optional), and headlight. It also highlights the 135-145mm rear dropout size compatibility.

- 1. Install Rear Wheel:** Replace your bicycle's rear wheel with the pre-laced motor wheel. Ensure the dropout width is 135-145mm. Securely fasten the wheel.
- 2. Mount Controller:** Find a suitable location on your bike frame for the intelligent controller box, typically near the battery or motor. Secure it firmly.
- 3. Install PAS Sensor:** Attach the Pedal Assist System (PAS) sensor to your bike's bottom bracket. Ensure correct alignment for accurate pedal detection. Note: A right-side PAS sensor may be needed for hollow cranksets.
- 4. Mount Display and Controls:** Install the display, thumb throttle, and brake levers onto your handlebars. Position them for comfortable and safe access.
- 5. Connect Wiring:** Carefully connect all cables according to the diagram. Ensure all connections are snug and waterproof. The 1T4 cable simplifies wiring for multiple accessories.
- 6. Install Headlight:** Mount the headlight to the front of your bike and connect it to the system.
- 7. Battery Connection:** Connect your 48V/52V battery (sold separately) to the controller. Ensure the battery is fully charged

before first use.

## OPERATING INSTRUCTIONS

Once installed, operating your Varstrom ebike conversion kit is straightforward. This section covers basic operation and display functions.

### Powering On/Off

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

### Display Options and Functions

Your kit may come with one of three advanced display choices: VD03, VD04, or EKD01. Each display offers different features and visual clarity.



#### EKD01 Display

- 2.4" TFT Screen
- φ22.2/25.4mm Holder
- Navigation Function
- 9 PAS Level
- IP67 Waterproof
- Support :English,Français,Español,Italiano,Deutsch,Polski, Nederlands,Čeština, 中文
- Support Remote Locking & Unlocking(On“BIKEGO+”APP )
- Quick-Switch to 25 km/h Street-legal Mode (Holding "+" and "-" Button Together)

#### VD03 Display

- 1.5" LED Screen
- φ22.2mm Holder
- English Version
- 9 PAS Level
- IP67 Waterproof
- “BIKEGO+”APP Support Remote Locking & Unlocking
- Quick-Switch to 25 km/h Street-legal Mode (Holding “Power” and “-” Button Together)



#### VD04 Display



- 3.5"IPS Screen
- φ22.2/25.4/31.8mm Holder
- Navigation Function
- 9 PAS Level
- IP67 Waterproof
- Support :English,Français,Español,Italiano,Deutsch,Polski, Nederlands,Čeština, 中文
- Support Remote Locking & Unlocking(On“BIKEGO+”APP )
- Quick-Switch to 25 km/h Street-legal Mode (Holding "+" and "-" Button Together)

Image: Comparison of EKD01, VD03, and VD04 display units. EKD01 is a 2.4" TFT screen with navigation. VD03 is a compact 1.5" LED screen. VD04 is a large 3.5" IPS screen with enhanced visuals and navigation. All support 9 PAS levels, are IP67 waterproof, connect to

the BIKEGO+ app for remote locking/unlocking, and feature one-key speed limit adjustment.

- **VD03 Display:** A compact 1.5" LED screen, ideal for limited space or budget. Covers essential functions.
- **VD04 Display:** A large 3.5" IPS screen, offering enhanced visuals and data clarity.
- **EKD01 Display:** A wide 2.4" TFT horizontal display, also offering enhanced visuals and data.
- **Common Features:** All three displays support 9 PAS levels, are IP67 waterproof, connect to the BIKEGO+ app for remote locking and unlocking, and include one-key speed limit adjustment.

## Pedal Assist System (PAS)

The PAS sensor detects your pedaling motion and provides motor assistance based on the selected assist level. Use the '+' and '-' buttons on your display to adjust the assist level (typically 1-9).

## Thumb Throttle

The thumb throttle provides on-demand power, allowing you to accelerate without pedaling. Use it cautiously, especially in crowded areas or when starting from a stop.

## Brake Levers

The included brake levers are designed to cut off motor power when engaged, ensuring safe stopping. Always test your brakes before riding.

## MAINTENANCE

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

- **Cleaning:** Regularly clean your ebike with a damp cloth. Avoid high-pressure washing directly on electrical components. The motor has an IPX5 waterproof rating, suitable for splashes, but not submersion.
- **Connections:** Periodically check all electrical connections for tightness and corrosion. Ensure cables are not pinched or damaged.
- **Tires:** Maintain correct tire pressure as indicated on your tire sidewall. Inspect tires for wear and damage.
- **Brakes:** Check brake pads for wear and ensure brake levers are functioning correctly. Adjust as needed.
- **Motor:** The geared brushless motor is designed for durability. The 125XVH performance version features durable nylon helical gears for extended lifespan and quiet operation (<60dB). No specific user maintenance is required for the internal motor components.
- **Battery Care:** Follow the manufacturer's instructions for your specific battery (sold separately). Generally, store batteries in a cool, dry place and avoid fully discharging them.

## TROUBLESHOOTING

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This section provides solutions to common issues you might encounter with your ebike kit.

- **No Power to Display:**
  - Check battery connection and ensure the battery is charged.
  - Verify all cable connections, especially the main power cable to the controller.
- **Motor Not Assisting:**
  - Ensure the PAS sensor is correctly installed and aligned.
  - Check if the assist level on the display is set above zero.
  - Verify brake levers are not engaged, as they cut motor power.
- **Throttle Not Working:**
  - Check the throttle cable connection to the controller.

- Ensure the system is powered on and not in a restricted mode (e.g., street-legal mode).

- **Error Codes on Display:**

- Refer to your specific display's manual for a list of error codes and their meanings.
- Common errors relate to motor, controller, or sensor malfunctions. Recheck connections.

If you encounter persistent issues, please contact Varstrom customer support for assistance.

## SPECIFICATIONS

Detailed specifications for the Varstrom Rear Hub Motor Kit.

### Motor Specifications

<b>VARSTROM Hub Motor Specifications</b>				
	<b>125EVH 48V500W Front Hub Motor</b> Standard Version	<b>125EVH 48V500W Rear Hub Motor</b> Standard Version	<b>125XVH 48V500W Rear Hub Motor</b> Performance Version	<b>125XVH 48V750W Rear Hub Motor</b> Performance Version
<b>Motor Model</b>	125EVH 48V500W Front Hub Motor (Standard Version)	125EVH 48V500W Rear Hub Motor (Standard Version)	125XVH 48V500W Rear Hub Motor (Performance Version)	125XVH 48V750W Rear Hub Motor (Performance Version)
<b>Motor Type</b>	Gear Drive Brushless Motor			
<b>Rated Power</b>	500W	500W	500W	750W
<b>Peak Power</b>	800W	800W	864W	1056W
<b>Rated Voltage</b>	48V	48V	48V	48V
<b>Max Speed</b>	40-45KM/h	40-45KM/h	45-50KM/h	55-60KM/h
<b>Max Torque</b>	65N.m	65N.m	65N.m	80N.m
<b>Efficiency</b>	≥78%	≥78%	≥80%	≥80%
<b>Compatible Size</b>	100mm Front Dropout	135-145mm Rear Dropout	135-145mm Rear Dropout	135-145mm Rear Dropout
<b>Brake Type</b>	Disc Brake / V Brake			
<b>Spoke Type</b>	12G * 36H			
<b>Cassette Type</b>	≤10-Speed Cassette			
<b>Noise Grade</b>	<60dB			
<b>Waterproof</b>	IPX5			
<b>Wheel Size</b>	20/26/27.5/700C			

Image: Comprehensive table outlining the specifications for 125EVH 48V500W Front/Rear Hub Motor (Standard Version) and 125XVH 48V500W/48V750W Rear Hub Motor (Performance Version). Details include Motor Type (Gear Drive Brushless), Rated Power, Peak Power, Rated Voltage, Max Speed, Max Torque, Efficiency, Compatible Size, Brake Type, Spoke Type, Cassette Type, Noise Grade, Waterproof rating (IPX5), and Wheel Size.

## Varstrom Hub Motor Specifications Overview

Feature	125EVH 48V500W (Standard)	125XVH 48V500W (Performance)	125XVH 48V750W (Performance)
Motor Type	Gear Drive Brushless Motor		
Rated Power	500W	500W	750W
Peak Power	800W	864W	1056W
Rated Voltage	48V		
Max Speed	40-45 KM/H	45-50 KM/H	55-60 KM/H
Max Torque	65N·m	65N·m	80N·m
Efficiency	≥78%	≥80%	
Compatible Size	135-145mm Rear Dropout		
Brake Type	Disc Brake / V Brake		
Cassette Type	≤10-Speed Cassette		
Noise Grade	<60dB		
Waterproof	IPX5		
Wheel Size	20"/26"/27.5"/700C		

## Controller Specifications

### Controller Specifications

Controller	DC Rated Voltage	Rated Power	Limit Current	Rated Current	Under-Voltage Protection	Over-Voltage Protection
48V500W	48V	500W	18±1A	9±1A	39±1V	62.4V
48V750W	48V	750W	22±1A	11±1A	39±1V	62.4V

## General Specifications

- Brand:** Varstrom
- Model Name:** US JJ 125EVH/125XVH DZ-Rear
- Frame Material:** Aluminum
- Wheel Material:** Aluminum
- Number of Speeds:** 10 (compatible with up to 10-speed gear systems)
- Special Features:** Digital Display, Durable, Headlight, IPX5 Waterproof, Taillight (optional)
- Assembly Required:** Yes
- Skill Level:** Beginner (for assembly)

## Battery Compatibility

The kit is compatible with standard 48V/52V battery systems. Various battery options are available separately to suit your range and power needs.

# BATTERY PARAMETERS

• 48V 13Ah | Shark Battery  
• 48V 16Ah



• 48V 19.2Ah | Shark Battery  
• 48V 20Ah



Type	48V 13Ah	48V 16Ah	48V 19.2Ah	48V 20Ah
Watt Hour	624Wh	768Wh	921.6Wh	960Wh
Battery Cell	18650 2600mAh	18650 3200mAh	L*/G 21700 4800mAh	Sam*/sung 21700 5000mAh
BMS	30A	30A	30A	30A
Charge voltage	54.6V	54.6V	54.6V	54.6V
Size (L*W*H)	368*90*111mm	368*90*111mm	367*90*127mm	367*90*127mm
Weight	4.25kg	4.23kg	4.95kg	4.7kg
USB Port	✓	✓	✓	✓
Cycle Life	1000 times			
Protection Function	Over charge, Over discharge, Over current, Short circuit, Balance			

• 52V 20Ah | YingWu Battery



• 48V 20Ah | Voltz X Battery



• 48V 17.5Ah | Rear Rack Battery



Type	52V 20Ah	48V 20Ah	48V 17.5Ah
Watt Hour	1040Wh	960Wh	840Wh
Battery Cell	Sam*/sung 21700 5000mAh	Sam*/sung 21700 5000mAh	18650 2500mAh
BMS	30A	30A	30A
Charge voltage	58.8V	54.6V	54.6V
Size (L*W*H)	368*95*125mm	365*109*140mm	476*165*89mm
Weight	5kg	5.2kg	6kg
USB Port	✗	✓ USB & Type-C Fast Charge	✓
Cycle Life	1000 times		
Protection Function	Over charge, Over discharge, Over current, Short circuit, Balance		

Image: Table displaying parameters for various 48V and 52V battery options, including Shark Battery (13Ah, 16Ah, 19.2Ah, 20Ah), YingWu Battery (52V 20Ah), Voltz X Battery (48V 20Ah), and Rear Rack Battery (48V 17.5Ah). Parameters include Type, Watt Hour, Battery Cell, BMS, Charge Voltage, Size (L\*W\*H), Weight, USB Port, Cycle Life, and Protection Function.

## WARRANTY AND SUPPORT

### Warranty Information

Varstrom offers a limited warranty for this product. The warranty includes a 30-day return policy and 365 days for repair or replacement of defective parts. Please retain your proof of purchase for warranty claims.

### Customer Support

For technical assistance, troubleshooting beyond this manual, or warranty inquiries, please contact Varstrom customer support through the retailer where you purchased the product or visit the official Varstrom website for contact information.

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