

VECTOR™ 3 A03220

Owner's Manual

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This product is ANT+® certified. Visit www.thisisant.com/directory for a list of compatible products and apps.

The FCC ID is located in the battery compartment. FCC ID: IPH-03220

M/N: A03220

Introduction

WARNING

Read all instructions carefully before installing and using the Vector system. Improper use could result in serious injury.

See the *Important Safety and Product Information* guide in the product box for product warnings and other important information.

NOTICE

Go to www.garmin.com/Vector3owner for the latest information including bike compatibility, software updates, and video tutorials.

Thank You

Thank you for your Vector 3 or Vector 3S purchase. This manual covers both Vector 3 systems.

Vector 3 was designed for cyclists, by cyclists, to provide an outstanding experience of owning a precision power measurement system for your bike.

Vector 3 is simple, accurate, and easy to use.

For software updates, video tutorials, and everything you need to get years of service out of your Vector 3, go to www.garmin.com/Vector3owner.

Now it's time to put the power under your feet and get out there and ride.

Getting Started

- 1 Install the Vector 3 components (*Installing the Vector 3 Components*, page 1).
- 2 Install the shoe cleats (*Installing the Shoe Cleats*, page 2).
- 3 Pair Vector 3 with your Edge® device (*Pairing Vector 3 with Your Edge 1000*, page 2).
- 4 Go for a ride (*Your First Ride*, page 2).
- 5 View your history (*Vector 3 Data*, page 3).
- 6 Send your history to your computer (*Sending Your Ride to Garmin Connect*, page 3).

Installing the Vector 3 Components


The installation steps for the Vector 3 and Vector 3S systems are very similar. Procedures that are specific to the Vector 3S system are noted.

Preparing for the Installation

- 1 Confirm the compatibility of your bike at www.garmin.com/Vector3owner.
- 2 Find the sensor ID that is engraved on the spindle, and write it down.
- 3 Remove the existing pedals.
- 4 Clean the threads, and remove old grease.

Move your bike chain to the largest chain ring and the smallest cassette gear.

The bike chain should be in the outermost position to determine proper clearance between the pedal pod cable and the chain.

NOTE: There must be at least 5 mm clearance  between the chain and the crank arm.

- Tighten the cleat firmly to the shoe.

NOTE: Garmin recommends torque of 4 to 6 lbf-ft. (5 to 8 N-m).

Adjusting the Release Tension

NOTICE

Do not overtighten the release tension screw on the bottom of the pedal. The release tension should be adjusted equally for both pedals.


Use a 3 mm hex key to adjust the release tension of each pedal.

There is a window on the back of the pedal binding that shows the allowable range.

Pairing Vector 3 with Your Edge 1000

Before you can view Vector 3 data on the Edge device, you must pair the devices.

Pairing is the connecting of ANT+® wireless sensors. This procedure contains instructions for the Edge 1000. If you have another compatible device, see *Other Compatible Devices*, page 6, or go to www.garmin.com/Vector3owner.

- Bring the Edge device within range (3 m) of the sensor.
 - NOTE:** Stay 10 m away from other ANT+ sensors while pairing.
- Turn on the Edge device.
- From the home screen, select  > **Sensors** > **Add Sensor** > **Power**.
- Rotate the crank arm a few times.
- Select your sensor.

When the sensor is paired with your Edge device, a message appears, and the sensor status is Connected. You can customize a data field to display Vector 3 data.




Pedal Pod Status LED

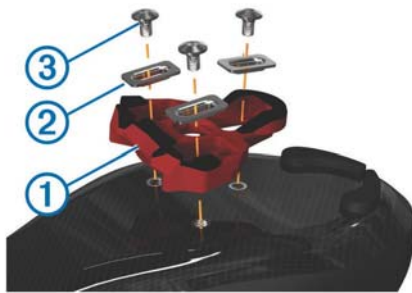
Multiple green or red LED flashes indicate a system issue that requires your attention.

LED Activity	Status
1 green flash every 10 seconds.	The Vector system is working properly.
3 green flashes every 10 seconds.	Cannot connect to the other pedal.
1 red flash every 10 seconds.	The battery is low.
20 green flashes	File transfer or software update was successful.
20 red flashes	File transfer or software update failed.

Installing the Shoe Cleats

NOTE: The left and right cleats are the same.

- Apply a thin layer of grease on the cleat bolt threads.
- Align the cleat , washers , and bolts .



- Use a 4 mm hex key to loosely attach each bolt to the sole of the shoe.
- Adjust the cleat to the shoe in your preferred position. This can be adjusted after a trial ride.

Your First Ride

Before you ride with Vector 3 for the first time, you must enter the crank length and set the installation angle of the sensors inside the pedals. The Vector 3 system automatically calibrates after each ride. You must also enter the crank length when you move Vector 3 to another bike.

This procedure contains instructions for the Edge 1000 device. If you have another compatible device, see *Other Compatible Devices*, page 6, or go to www.garmin.com/Vector3owner.

Entering the Crank Length

The crank length is often printed on the crank arm.

- 1 Rotate the pedals a few times in order to activate Vector 3.
- 2 From the home screen, select **Sensors** > **Sensor Details** > **Crank Length**.
- 3 Enter the crank length, and select ✓

Setting the Installation Angle

Before you set the installation angles, you must set the Edge data fields to display power and cadence.

- 1 Go for a short ride on a trainer or on the road.
- 2 Ride until the cadence is nearly 70 rpm.
- 3 Accelerate smoothly to approximately 90 rpm.

When the installation angles are successfully set, a message appears and data fields display power data on the Edge device (1000, 810, and 510 only).

Customizing the Data Fields

This procedure contains instructions for the Edge 1000, 810, 800, and 510 devices. If you have another compatible device, see *Other Compatible Devices*, page 6.

- 1 Hold a data field to change it.
- 2 Select a category.
- 3 Select a data field.

Training

Pedal-Based Power

Vector 3 measures pedal-based power.

Vector 3 measures the force you apply a few hundred times every second. Vector 3 also measures your cadence or rotational pedaling speed. By measuring the force, the direction of force, the rotation of the crank arm, and time, Vector 3 can determine power (watts). Because Vector 3 independently measures left and right leg power, it reports your left-right power balance.

NOTE: The Vector 3 S system does not provide left-right power balance.

Cycling Dynamics

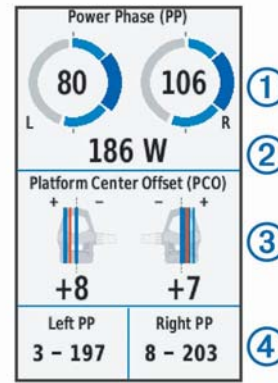
Cycling dynamics metrics measure how you apply power throughout the pedal stroke, and where you apply power on the pedal, allowing you to understand your particular way of riding. Understanding how and where you produce power allows you to train more efficiently and evaluate your bike fit.

Using Cycling Dynamics

Before you can use cycling dynamics, you must pair the Vector 3 power meter with your device (*Pairing Vector 3 with Your Edge 1000*, page 2).

NOTE: Recording cycling dynamics uses additional device memory.

- 1 Go for a ride.
- 2 Scroll to the cycling dynamics screen to view your peak power phase **A**, total power phase **A**, and platform center offset **A**.



- 3 If necessary, hold a data field **A** to change it (*Customizing the Data Fields*, page 3).

NOTE: The two data fields at the bottom of the screen can be customized.

You can send the ride to your Garmin Connect™ account to view additional cycling dynamics data (*Sending Your Ride to Garmin Connect*, page 3).

Power Phase Data

Power phase is the pedal stroke region (between the start crank angle and the end crank angle) where you produce positive power.

Platform Center Offset

Platform center offset is the location on the pedal platform where you apply force.

Maintenance Tips

NOTICE

Some bike tools may scratch the finish of Vector 3 components.

- Use wax paper or a towel between the tool and the hardware.
- After any bike adjustments, rotate the crank arm to check for clearance.
- Keep Vector 3 components clean.
- When moving Vector 3 to another bike, clean the threads and surfaces thoroughly.
- Go to www.garmin.com/Vector3owner for the latest updates and information.

Vector 3 Data

Your ride data or history is recorded to your Edge device or another compatible Garmin device. This section contains instructions for the Edge 1000.

NOTE: History is not recorded while the timer is stopped or paused.

When the device memory is full, a message appears. The device does not automatically delete or overwrite your history. You should upload your history to your Garmin Connect account periodically to keep track of all your ride data.

Sending Your Ride to Garmin Connect

NOTICE

To prevent corrosion, thoroughly dry the USB port, the weather cap, and the surrounding area before charging or connecting to a computer.

- 1 Pull up the weather cap **A** from the USB port **A**.



- 2 Plug the small end of the USB cable into the USB port on the device.
- 3 Plug the large end of the USB cable into a computer USB port.
- 4 Go to www.garminconnect.com/start.
- 5 Follow the on-screen instructions.

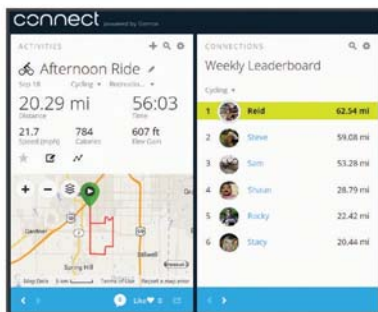
Garmin Connect

You can connect with your friends on Garmin Connect. Garmin Connect gives you the tools to track, analyze, share, and encourage each other. Record the events of your active lifestyle including runs, walks, rides, swims, hikes, triathlons, and more. To sign up for a free account, go to www.garminconnect.com/start.

Store your activities: After you complete and save an activity with your device, you can upload that activity to Garmin Connect and keep it as long as you want.

Analyze your data: You can view more detailed information about your activity, including time, distance, elevation, heart rate, calories burned, cadence, an overhead map view, pace and speed charts, and customizable reports.

NOTE: Some data requires an optional accessory such as a heart rate monitor.



Plan your training: You can choose a fitness goal and load one of the day-by-day training plans.

Share your activities: You can connect with friends to follow each other's activities or post links to your activities on your favorite social networking sites.

Disconnecting the USB Cable

If your device is connected to your computer as a removable drive or volume, you must safely disconnect your device from your computer to avoid data loss. If your device is connected to your Windows® computer as a portable device, it is not necessary to safely disconnect.

- 1 Complete an action:
 - For Windows computers, select the **Safely Remove Hardware** icon in the system tray, and select your device.
 - For Mac® computers, drag the volume icon to the trash.
- 2 Disconnect the cable from your computer.

Device Information

Vector 3 Device Care

NOTICE

Keep the components clean and free of debris.

Do not use a sharp object to clean the device.

Avoid chemical cleaners, solvents, and insect repellents that can damage plastic components and finishes.

Do not submerge or pressure wash the components.

Do not store the device where prolonged exposure to extreme temperatures can occur, because it can cause permanent damage.

Replace components with Garmin parts only. See your Garmin dealer or the Garmin website.

NOTICE

NOTICE

Water resistance	IPX7
	NOTICE
	Do not submerge or pressure wash the components.
Radio frequency/ protocol	2.4 GHz ANT+ wireless communications protocol Bluetooth® Smart wireless technology

Battery Information

Vector 3 monitors the battery level of both pedal pods and sends status information to your Edge device. When you receive a low battery warning, you have approximately 10–20 hours of operation time remaining.

WARNING

Do not use a sharp object to remove user-replaceable batteries.

Contact your local waste disposal department to properly recycle the batteries. Perchlorate Material – special handling may apply. Go to www.dtsc.ca.gov/hazardouswaste/perchlorate.

NOTE: Always replace all batteries at the same time.

1

Vector 3 Storage

If you are transporting your bicycle or not using Vector 3 for an extended period of time, Garmin recommends removing Vector 3 and storing it in the product box.



Vector 3 Specifications

Battery type	User-replaceable LR44, 1.5 volts, 2 per pedal Note: SR44 batteries are compatible replacements.
Battery life	Estimated 120 hours of riding time
Operating temperature range	From 14° to 122°F (from -10° to 50°C)

Other Compatible Devices

Edge 810 and 510 Device Instructions



Pairing Vector 3 with Your Edge 810 or 510 Device

- 1 Bring the Edge device within range (3 m) of the sensor.
NOTE: Stay 10 m away from other ANT+ sensors while pairing.
- 2 Turn on the Edge device.
- 3 From the home screen, select  > **Bike Profiles**.
- 4 Select a profile.
- 5 Select .
- 6 Enable the sensor, and select **Search**.
- 7 Rotate the crank arm a few times.

When the sensor is paired with your Edge device, the sensor status is Connected. You can customize a data field to display Vector 3 data.



Entering the Crank Length


The crank length is often printed on the crank arm.

- 1 Rotate the pedals a few times in order to activate Vector 3.
- 2 From the home screen, select  > **Bike Profiles**.
- 3 Select a profile.
- 4 Select **Crank Length > Manual**.
- 5 Enter the crank length, and select .

Edge 800 Device Instructions



Pairing Vector 3 with the Edge 800 Device

- 1 Bring the Edge device within range (3 m) of the sensor.
NOTE: Stay 10 m away from other ANT+ sensors while pairing.
- 2 Turn on the Edge device.
- 3 Select **MENU** >  > **Bike Settings > Bike Profiles**.
- 4 Select a bike.
- 5 Select **ANT + Power > Power Meter > Yes**.
- 6 Rotate the crank arm a few times.
- 7 Select .

When the sensor is paired with your Edge device, a message appears, and  appears solid on the status page. You can customize a data field to display Vector 3 data.

Entering the Crank Length

The crank length is often printed on the crank arm.

- 1 Rotate the pedals a few times in order to activate Vector 3.
- 2 Select **MENU** >  > **Bike Settings > Bike Profiles**.
- 3 Select a profile.
- 4 Select **Bike Details > Crank Length > Custom**.
- 5 Enter the crank length, and select .


Edge 500 Device Instructions

Pairing Vector 3 with the Edge 500 Device

- 1 Bring the Edge device within range (3 m) of the sensor.
NOTE: Stay 10 m away from other ANT+ sensors while pairing.
- 2 Turn on the Edge device.
- 3 Hold **MENU**.
- 4 Select **Settings > Bike Settings**.
- 5 Select a bike.
- 6 Select **ANT + Power**.

- 7 Enable the sensor, and select **Search**.

- 8 Rotate the crank arm a few times.

When the sensor is paired with your Edge device, a message appears, and  appears solid on the main menu. You can customize a data field to display Vector 3 data.

Entering the Crank Length

The crank length is often printed on the crank arm.

- 1 Rotate the pedals a few times in order to activate Vector 3.
- 2 Hold **MENU**.
- 3 Select **Settings > Bike Settings**.
- 4 Select a bike.
- 5 Select **Bike Details > More > Crank Length > Manual**.
- 6 Enter the crank length.

Customizing the Data Fields

This procedure contains instructions for the Edge 500 device.

- 1 Hold **MENU**.
- 2 Select **Settings > Bike Settings > Data Fields**.
- 3 Select a page.
- 4 Select the number of data fields to appear on the page.
- 5 Select a data field.

fēnix® 3 Device Instructions

Pairing Vector 3 with the fēnix 3 Device

- 1 Bring the fēnix device within 3 m of the sensor.
NOTE: Stay 10 m away from other ANT+ sensors while pairing.
- 2 Hold **UP**.
- 3 Select **Settings > Sensors > Add New > Power**.
- 4 Rotate the crank arm a few times.
- 5 Select your sensor.


When the sensor is paired with your fēnix device, the sensor status changes from Searching to Connected.

Customizing the Data Fields

- 1 Hold **UP**.
- 2 Select **Settings > Apps > Bike > Data Screens**.
- 3 Select a screen.
- 4 Select a data field to change it.

Entering the Crank Length

The crank length is often printed on the crank arm.

- 1 Rotate the pedals a few times in order to activate Vector 3.
- 2 Hold **UP**.
- 3 Select **Settings > Sensors**.
- 4 Select your sensor.
- 5 Select **Crank Length**.
- 6 Enter the crank length, and select .

fēnix 2 Device Instructions

Pairing Vector 3 with the fēnix 2 Device

Before you can pair ANT+ sensors, Bluetooth® wireless technology must be turned off.

- 1 Bring the fēnix device within 3 m of the sensor.
NOTE: Stay 10 m away from other ANT+ sensors while pairing.
- 2 Hold **MENU**.
- 3 Select **Settings > Sensors > Power**.
- 4 Rotate the crank arm a few times.

5 Select your sensor.

6 Select **Status > On**.

When the sensor is paired with your fēnix device, the sensor status changes from Searching to Connected.

Customizing the Data Fields

1 Hold **MENU**.

2 Select **Settings > Sensors > Activity > Bike > Data Pages**.

3 Select **Add Page**, and follow the on-screen instructions to add a new page (optional).

4 Select a page to edit.

5 Select **Edit** to change the data fields.

Entering the Crank Length

The crank length is often printed on the crank arm.

1 Rotate the pedals a few times in order to activate Vector 3.

2 Hold **MENU**.

3 Select **Settings > Sensors > Power > Crank Length**.

4 Enter the crank length, and select **Done**.

Forerunner® 920XT Device Instructions

Pairing Vector 3 with the Forerunner 920XT Device

1 Bring the Forerunner device within 3 m of the sensor.

NOTE: Stay 10 m away from other ANT+ sensors while pairing.

2 Select **⋮ > Settings > Sensors and Accessories > Add New > Power**.

3 Rotate the crank arm a few times.

4 Select your sensor.

When the sensor is paired, a message appears.

Customizing the Data Fields

1 Select **⋮ > Activity Settings > Data Screens**.

2 Select a screen.

3 If necessary, select **Status > On** to enable the data screens.

4 If necessary, edit the number of data fields.

5 Select a data field to change it.

Entering the Crank Length

The crank length is often printed on the crank arm.

1 Rotate the pedals a few times in order to activate Vector 3.

2 Select **⋮ > Settings > Sensors and Accessories**.

3 Select your sensor.

4 Select **Crank Length**.

5 Enter the crank length.

Forerunner 910XT Device Instructions

Pairing Vector 3 with the Forerunner 910XT Device

1 Bring the Forerunner device within 3 m of the sensor.


NOTE: Stay 10 m away from other ANT+ sensors while pairing.

2 Select **MODE > Settings > Bike Settings**.

3 Select your bike.

4 Select **ANT+Power > Yes > Restart Scan**.

5 Rotate the crank arm a few times.

When the sensor is paired, a message appears, and  appears solid on the screen.

Customizing the Data Fields

1 Select **MODE > Settings > Bike Settings > Data Fields**.

2 Select a page to edit.

3 If necessary, edit the number of data fields.

4 Select a data field to change it.

Entering the Crank Length

The crank length is often printed on the crank arm.

1 Rotate the pedals a few times in order to activate Vector 3.

2 Select **MODE > Settings > Bike Settings**.

3 Select your bike.

4 Select **Bike Details > More > Crank Length**.

5 Enter the crank length.

Appendix

Registering Vector 3

Help us better support you by completing our online registration today.

- Go to www.garmin.com/Vector3owner.
- Keep the original sales receipt, or a photocopy, in a safe place.

Power Data Fields

NOTE: This list contains power data fields for the Edge 1000 device. If you have another compatible device, see your device owner's manual.

NOTE: Data fields that display pedal smoothness, torque effectiveness, and balance data are not supported by the Vector 3 S system.

Balance: The current left/right power balance.

Balance - 10s Avg.: The 10-second moving average of the left/right power balance.

Balance - 30s Avg.: The 30-second moving average of the left/right power balance.

Balance - 3s Avg.: The three-second moving average of the left/right power balance.

Balance - Avg.: The average left/right power balance for the current activity.

Balance - Lap: The average left/right power balance for the current lap.

Cadence: The number of revolutions of the crank arm or number of strides per minute. Your device must be connected to a cadence accessory for this data to appear.

Cadence - Avg.: The average cadence for the current activity.

Cadence - Lap: The average cadence for the current lap.

PCO: The platform center offset. Platform center offset is the location on the pedal platform where you apply force.

PCO - Avg.: The average platform center offset for the current activity.

PCO - Lap: The average platform center offset for the current lap.

Pedal Smoothness: The measurement of how evenly a rider is applying force to the pedals throughout each pedal stroke.

Power: The current power output in watts.

Power - %FTP: The current power output as a percentage of functional threshold power.

Power - 10s Avg.: The 10-second moving average of power output.

Power - 30s Avg.: The 30-second moving average of power output.

Power - 3s Avg.: The three-second moving average of power output.

Power - Avg.: The average power output for the current activity.

Power - IF: The Intensity Factor™ for the current activity.

Power - kJ: The accumulated work performed (power output) in kilojoules.

Power - Lap: The average power output for the current lap.

Power - Lap Max.: The top power output for the current lap.

Power - Last Lap: The average power output for the last completed lap.

Power - Max.: The top power output for the current activity.

Power - NP: The Normalized Power™ for the current activity.

Power - NP Lap: The average Normalized Power for the current lap.

Power - NP Last Lap: The average Normalized Power for the last completed lap.

Power Phase - L.: The current power phase angle for the left leg. Power phase is the pedal stroke region where you produce positive power.

Power Phase - L. Avg.: The average power phase angle for the left leg for the current activity.

Power Phase - L. Lap: The average power phase angle for the left leg for the current lap.

Power Phase - L. Peak: The current power phase peak angle for the left leg. Power phase peak is the angle range over which you produce the peak portion of the driving force.

Power Phase - L. Peak Avg.: The average power phase peak angle for the left leg for the current activity.

Power Phase - L. Peak Lap: The average power phase peak angle for the left leg for the current lap.

Power Phase - R.: The current power phase angle for the right leg. Power phase is the pedal stroke region where you produce positive power.

Power Phase - R. Avg.: The average power phase angle for the right leg for the current activity.

Power Phase - R. Lap: The average power phase angle for the right leg for the current lap.

Power Phase - R. Peak: The current power phase peak angle for the right leg. Power phase peak is the angle range over which you produce the peak portion of the driving force.

Power Phase - R. Peak Avg.: The average power phase peak angle for the right leg for the current activity.

Power Phase - R. Peak Lap: The average power phase peak angle for the right leg for the current lap.

Power - TSS: The Training Stress Score™ for the current activity.

Power - watts/kg: The amount of power output in watts per kilogram.

Power Zone: The current range of power output (1 to 7) based on your FTP or custom settings.

Time Seated: The time spent seated while pedaling for the current activity.

Time Seated Lap: The time spent seated while pedaling for the current lap.

Time Standing: The time spent standing while pedaling for the current activity.

Time Standing Lap: The time spent standing while pedaling for the current lap.

Torque Effectiveness: The measurement of how efficiently a rider is pedaling.

Updating the Vector 3 Software Using the Edge 1000

Before you can update the software, you must pair your Edge 1000 device to your Vector 3 system.

- 1 Send your ride data to Garmin Connect using a USB or Wi-Fi connection.
Garmin Connect automatically looks for software updates and sends them to your Edge device.
- 2 Bring your Edge device within range (3 m) of the sensor.
- 3 Rotate the crank arm a few times.
The Edge device prompts you to install any pending software updates.
- 4 Follow the on-screen instructions.

Understanding the Multiple Status LED Flashes

The red LED always indicates the pedal pod battery is low. Multiple red LED flashes indicate the pedal pod battery is low and there is a system issue.

Performing a Static Torque Test

NOTICE

The static torque test is intended for advanced cyclists and installation experts. This test is not required under normal circumstances to achieve good results with the Vector 3 system. This test is available for the Edge 1000, 810, and 510 devices.

Garmin recommends performing the static torque test a minimum of three times and averaging the reported torque values.

Go to www.garmin.com/Vector3owner, and click on the FAQs link for detailed instructions.

Following repeated static torque tests, if the reported torque value is consistently different than the expected value, you can enter a scale factor for one or both pedals. The scale factor is stored in the pedal and adjusts the power value that is calculated on the pedal. The scale factor is sent to the Edge device and stored on Edge device.

Crank Compatibility

TBD .

Third-Party Devices

For a list of devices that are compatible with Vector 3, go to www.garmin.com/Vector3owner.

support.garmin.com



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