

VPEG eVib

OPERATIONS AND SAFETY MANUAL

Electromagnetic Seismic Vibrator System

VPEG-8

VPEG-16



ELECTROMAGNETIC
TECHNOLOGY



12V DC
BATTERY POWER



BROADBAND
FREQUENCY



GPS
INTEGRATED



SAFE
RELIABLE



EASY TO USE
SOFTWARE CONTROL

PORTABLE. POWERFUL. PRECISE.

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1. Purpose and Scope

This manual provides field operators, crew chiefs, technicians, and support personnel with a clear operating and safety reference for the VPEG eVib electromagnetic seismic vibrator system. It is intended to cover the general setup, connection, parameterization, deployment, field operation, data record handling, shutdown, and safety practices for the VPEG-8 and VPEG-16 configurations.

The manual is written as a practical field document. It should be used together with the Seismic Source software documentation for NavLink, NavLink VPEG, SourceLink, DataCollector, and related controller utilities.

Important

Do not operate, lift, transport, or modify a VPEG system without first reviewing the safety information in this manual and confirming the unit is correctly configured for the intended field deployment method.

2. Product Overview

The VPEG-8 and VPEG-16 are portable, battery-powered electromagnetic seismic vibrators designed for projects where a compact, controlled vibratory seismic source is required. Typical applications include high-density near-surface imaging, geotechnical and engineering investigations, environmental surveys, mining and hazard studies, static correction surveys, academic research, and other projects where large hydraulic vibrators are not practical.

The system is mechanically self-contained and operates from 12 VDC battery power. Control is handled through the eVib controller using Wi-Fi, Ethernet, or manual triggering depending on the field workflow. The VPEG platform is intended to provide a broad, programmable frequency sweep while maintaining a small operational footprint and low mechanical noise.

Model Summary

Item	VPEG-8	VPEG-16
Primary deployment	Two-person carry mount or powered hitch lift	Mini skid-steer or forklift-style carrier mount
Typical application	Restricted access, small crew, dense near-surface work	Higher output production surveys and carrier-based deployment
Power source	12 V battery system	12 V battery system
Controller	eVib controller with NavLink ecosystem	eVib controller with NavLink ecosystem

3. Definitions

Term	Definition
VPEG	The complete portable electromagnetic vibrator system, including the vibrator assembly, eVib controller, mounting bracket or carrier interface, associated cabling, GPS antenna, Wi-Fi antenna, and operational accessories.
VPEG-8	The smaller VPEG configuration intended for portable or hitch-lift deployment, depending on the selected mounting package.
VPEG-16	The higher-output VPEG configuration intended for mini skid-steer, forklift-style, or other carrier-mounted deployment.
eVib Controller	The electronic vibrator control unit. Functionally similar to a Force 3 controller for sweep generation and timing control, but configured for the electric VPEG platform rather than hydraulic vibrator controls.
VP	Vibrator Point. A field source location where one or more sweeps are performed.
Sweep	A controlled frequency signal generated by the VPEG over a defined frequency range and duration.
Listen Time	The time interval after a sweep or trigger event during which acquisition continues before the next action in a programmed sequence.

4. Safety Information

Safety is the responsibility of every operator and crew member. The VPEG is an electrical and mechanical field device that can create hazards if it is connected incorrectly, lifted improperly, operated while unstable, or used outside its intended purpose. Review this section before every project and use the checklists in the appendices during field operations.

4.1 General Safety

- Inspect the VPEG before each use. Check fasteners, cables, connectors, lifting points, mounting brackets, straps, and the baseplate.
- Do not operate the unit if there are visible cracks, loose components, damaged cables, missing fasteners, worn straps, or signs of electrical damage.
- Keep hands, feet, loose clothing, tools, and bystanders clear of the unit during operation.
- Only trained personnel should connect power, configure software, lift the unit, or initiate sweeps.
- Do not modify the unit, mounting system, wiring, controller, or safety-related components without written approval from R.T. Clark.

4.2 Electrical and Battery Safety

- Always confirm battery polarity before connecting the power cables. Reversed polarity can cause shorts, electrical damage, and potential injury.
- The VPEG power switch must be in the OFF position before connecting or disconnecting the battery.
- Keep the battery area clear of combustible materials before making connections. A spark may occur if connections are made incorrectly or under load.

- Use properly rated battery cables and connectors. Do not operate with damaged insulation, loose terminals, or improvised connections.
- Do not use the unit in rain, lightning, standing water, or other conditions that may create an electrical hazard or damage the system.
- Do not submerge the VPEG or allow water to enter the controller, connector panel, battery connections, or cable ends.

4.3 Lifting, Mounting, and Transport Safety

- Use the mounting method intended for the specific VPEG configuration. Confirm the rated capacity of the carrier, hitch, forks, straps, chains, and any adapters before lifting or transporting.
- When using forklift or skid-steer style mounts, secure the VPEG to the carrier with approved retention straps or chains where applicable.
- When using a hand-carry mount, use sufficient personnel, clear the walking path, and maintain stable footing. Do not lift beyond crew capability.
- Do not stand under or place body parts under a suspended VPEG.
- Do not transport the unit unsecured. Vibration and road movement can loosen components, damage the unit, or create a hazard.

4.4 Operating Safety

- The VPEG must be stable, coupled, and in contact with the ground before initiating a sweep.
- Do not operate the VPEG while suspended, lifted off the ground, or loosely positioned on a carrier.
- Maintain a clear work area before triggering a sweep sequence.
- Use only the hold-down force required to stabilize and couple the unit. Excessive force is not required and may damage equipment.
- Stop operation immediately if the unit moves unexpectedly, produces abnormal noise, loses communication, overheats, or shows signs of electrical or mechanical malfunction.

5. System Components and Required Equipment

The VPEG is shipped in a crate and is typically preassembled with the required operational cabling and accessories. Inspect all components after unpacking and confirm that the system matches the packing list for the purchased configuration.

Included Components

- VPEG vibrator assembly
- eVib controller integrated with the unit
- Power cables
- Wi-Fi antenna
- GPS antenna
- Manual push-button start switch
- Mounting bracket or deployment package supplied with the purchased configuration

Required Equipment Not Included

- 12 V battery or batteries sized for the planned operating day. LiFePO4 batteries are recommended where weight and runtime are important.
- Android tablet, Android phone, or PC laptop for configuration and wireless operation.
- USB flash drive for optional field record backup, when using the USB panel port.



Tool Bag & Components

- Approved lifting equipment, straps, chains, or vehicle mount hardware required for the selected deployment method.

Battery planning guidance

We recommend 12VDC 100Ah LiFePO4 batteries and note that typical daily battery needs depend on sweep effort, temperature, field procedure, and number of VP locations. Final runtime guidance should be confirmed.

6. Front Connector Panel and Controls

The front connector panel provides the primary power and field interface connections.



Front connector panel with callouts

Connection / Control	Purpose	Operator Note
Battery positive and negative	Main 12 VDC system power input	Confirm polarity before connection. Power switch must be OFF before connecting.
Power switch	Turns the VPEG system on or off	Allow the controller time to boot before connecting software.
Manual start switch input	Connection for manual push-button sweep initiation	Used for single manual sweep triggering.
Trigger output	Timing output for external seismograph workflows	Confirm wiring and trigger requirements for the acquisition system.
Wi-Fi antenna	Wireless connection between tablet/laptop and eVib controller	Install before attempting Wi-Fi connection.
USB Type-A port	Optional field record export and timing data backup	Use a blank USB flash drive of suitable capacity.
GPS antenna	Positioning and timing input	Install with clear sky view where possible.
True Reference	Direct Sweep Signal	Used to output pilot signal for correlation
Geophone Out	BNC Connection to wired Geophone	Used for recording near field geophone

7. Setup and Power-On Procedure

7.1 Pre-Use Inspection

1. Place the VPEG on stable ground or secure it on the approved carrier/mount.
2. Inspect the baseplate, mounting structure, fasteners, battery rack, cables, antennas, and connector panel.
3. Confirm the selected battery is charged and appropriate for the planned work.
4. Confirm the power switch is OFF before making battery connections.
5. Verify the work area is clear of bystanders, combustible material, loose tools, and trip hazards.

7.2 Make Connections

1. Connect the battery cables, carefully observing correct polarity.
2. Connect the GPS antenna.
3. Connect the Wi-Fi antenna.
4. Connect the manual start switch if manual triggering will be used.
5. Connect trigger output to the seismograph if the acquisition system requires a direct timing trigger.
6. Insert a blank USB flash drive if local shot/timing record backup is desired.

7.3 Power On

1. Turn the VPEG power switch ON. (You will hear a “Thud, Thud” from the transducers)
2. Allow the eVib controller several minutes to boot fully.
3. On the tablet or laptop, open the available Wi-Fi network list.
4. Connect to the VPEG Wi-Fi network. The network name may appear as eVIB, EVIB1, or a similar unit-specific name.
5. After connection, open NavLink VPEG on Android or NavLink on PC.

Do not rush the startup sequence

The controller may take a few minutes to become visible as a Wi-Fi network and respond to the software. Power cycling too quickly can create unnecessary troubleshooting and may interrupt boot processes.

8. eVib Software Connection and Parameter Setup

8.1 Connecting to the eVib Controller

The eVib controller is controlled through the Seismic Source software ecosystem. Operators may use an Android device running NavLink VPEG or a PC laptop running NavLink. Applications are available from Seismic Source through the Seismic Source Installer. Follow the current Seismic Source installation instructions for the target device.

1. Connect the tablet or PC to the VPEG Wi-Fi network.
2. Launch NavLink VPEG on Android or NavLink on PC.
3. Confirm the software recognizes the eVib controller.
4. Confirm GPS, timing, sweep table, unit ID, group ID, and triggering settings before field operation.

8.2 Unit and Group IDs

VPEG units are shipped with default identification settings. The original draft indicates a default group ID of 1 and unit ID of 1. When operating multiple synchronized units, assign unique unit numbers so each

controller can be identified correctly. Refer to the current NavLink documentation for changing unit ID and group ID values.

8.3 Sweep Tables

Sweep tables allow operators to store up to 16 custom sweeps in the eVib controller. The controller may ship with general-purpose sweeps already loaded, but field crews should verify that the sweep table matches the project acquisition plan before production work begins.

Creating Sweeps in the Android App

1. Open NavLink VPEG.
2. Select the SWEEP TABLE menu.
3. Enter the required sweep parameters and assign the sweep to a table number from 1 through 16.
4. Select SEND SWEEPS to upload the table to the eVib controller.
5. Confirm the upload completed successfully. In the draft workflow, green indicates success.
6. Select COMPARE SWEEPS to verify that the tablet sweep table and eVib controller sweep table match.

Creating Sweeps on PC

1. Use Source Control F3 to build and export the sweep table.
2. Load the exported sweep table into NavLink on PC or NavLink VPEG on Android.
3. Send the sweep table to the eVib controller.
4. Compare the table after upload before field production.

9. Field Deployment and Mounting

Select the deployment method based on the VPEG model, field terrain, production requirements, crew size, and available carrier equipment. Always verify that the mounting method is rated for the unit, carrier, and expected field movement.

9.1 VPEG-16 Carrier-Mounted Deployment

The VPEG-16 is intended for carrier-mounted field operation. Forklift-style mounts, mini skid-steer mounts, or approved carrier adapters should be used according to the purchased configuration. Three-point hitch mounts are not recommended unless specifically engineered and approved for the application, because they may not provide the required controlled down-force and stability for proper coupling.

9.2 VPEG-8 Portable or Hitch-Lift Deployment

The VPEG-8 may be configured for two-person carry operation, forklift-style mounting, or powered hitch-lift deployment depending on the selected mounting package. Before using a hitch-lift, confirm the vehicle receiver, hitch class, hitch installation, lift mechanism, and attachment hardware are appropriate for the expected load and field conditions.

9.3 Coupling and Hold-Down Force

As with all vibratory seismic sources, coupling and hold-down weight are important for consistent sweep performance. Use enough down-force or operator weight to keep the baseplate stable and in place during the sweep. Excessive hold-down force is generally not required and may damage the unit, mount, or carrier. Stop immediately if the unit shifts, walks, or becomes unstable during operation.

10. Field Operation

10.1 Basic Sweep Workflow

1. Confirm the unit is stable, coupled, and safe to operate.
2. Confirm the desired sweep table and sweep number are loaded.
3. Confirm GPS, timing, and trigger settings.
4. Confirm crew members are clear of the unit.
5. Start the sweep from NavLink / NavLink VPEG or with the manual push-button start switch.
6. Monitor the unit during the sweep. Stop operations if abnormal motion, sound, communication loss, or other malfunction occurs.
7. Record field notes as required by the project acquisition plan.

10.2 Manual Triggering

The manual push-button start switch initiates a single sweep. This mode is useful when a simple field workflow is required or when the acquisition system does not require a programmed multi-sweep sequence from NavLink.

10.3 NavLink Triggering and Multi-Sweep Programs

NavLink and NavLink VPEG allow the operator to configure more advanced field workflows, including multiple sweeps at a VP and listen time between actions. This allows an operator to initiate an entire programmed sequence with a single start command when the project requires repeated sweeps at the same source point.

11. Field Files, USB Records, and End-of-Day Files

11.1 NavLink and SourceLink Field Records

For autonomous and nodal workflows, NavLink records timing and positioning information during field operation. Uploading NavLink packages to SourceLink allows the operator to manage time breaks and source positions, edit records where needed, and generate an End-of-Day file for acquisition system processing or data cutting workflows. Refer to Seismic Source documentation for the current SourceLink procedure.

11.2 USB Field Files

If a USB flash drive is inserted into the VPEG panel, shot data is written to the drive during operation. Use a blank USB flash drive of suitable capacity; the original draft recommends approximately 8 GB. The system writes folders containing binary files that may be read with Seismic Source SourceLink and/or DataCollector applications.

Good field practice

Create a daily file handling routine: insert a blank USB drive, verify records during the day, back up files at the end of the day, and keep the original field files unchanged until processing is complete.

12. Shutdown, Transport, and Storage

1. Complete the active sweep sequence and confirm the unit is idle.
2. Save, export, or back up field records as required by the project workflow.
3. Close NavLink / NavLink VPEG.

4. Turn the VPEG power switch OFF.
5. Disconnect the battery only after the power switch is OFF.
6. Remove USB drive, antennas, and accessories as appropriate for transport.
7. Secure the VPEG to its carrier, crate, or transport mount before moving.
8. Store the unit in a dry, protected location. Protect connector caps, cable ends, and battery terminals from moisture and contamination.

13. Inspection and Preventive Maintenance

Interval	Inspection Item	Action
Before each use	Power cables and connectors	Inspect for damage, loose terminals, corrosion, and insulation wear.
Before each use	Mounting hardware and straps	Check tightness, condition, and proper installation.
Before each use	Baseplate and frame	Look for cracks, deformation, missing fasteners, or loose parts.
Daily during operation	Unit stability and coupling	Confirm the unit does not shift during sweeps.
Daily after operation	USB / field records	Back up field files and confirm required records are available.
Periodic	Battery condition	Inspect battery health, charge condition, cables, terminals, and charger compatibility.
Periodic	Software and sweep tables	Confirm current software versions and project-approved sweep tables.

14. Troubleshooting Guide

Symptom	Possible Cause	Suggested Action
Wi-Fi network does not appear	Controller still booting, antenna not installed, power issue	Wait several minutes, confirm power switch is ON, confirm battery voltage, confirm Wi-Fi antenna is installed.
Tablet or PC will not connect	Wrong network, weak signal, previous Wi-Fi connection retained	Disconnect from other networks, select the eVib network, move closer to unit, restart app if needed.
Software does not recognize controller	Wi-Fi connected but controller not ready, app issue, IP/network mismatch	Confirm eVib network connection, wait for boot completion, restart NavLink, refer to Seismic Source documentation.
Sweep table mismatch	Table not sent successfully or wrong table loaded	Use SEND SWEEPS, then COMPARE SWEEPS before operating.
No GPS position	Antenna not connected, poor sky view, cable issue	Confirm antenna connection, move antenna to clear sky view, inspect cable.
No USB files	USB not inserted before operation, drive full, unsupported drive	Use a blank USB drive of suitable size and verify field record creation early in the day.

Unit shifts during sweep	Insufficient coupling or unstable ground	Stop operation, reposition, improve coupling, review hold-down method.
Abnormal sound or motion	Mechanical looseness, unstable mount, internal fault	Stop immediately, power down, inspect the unit, and contact technical support if the issue remains.

15. Warranty and Use Disclaimer

Limited 90-Day Warranty

R.T. Clark Co., Inc. warrants the VPEG eVib system, including the VPEG-8 and VPEG-16 models, to be free from defects in materials and workmanship under normal intended use for a period of ninety (90) days from the original date of delivery to the purchaser.

During the warranty period, R.T. Clark Co., Inc., at its sole discretion, will repair or replace defective components or assemblies determined to be the result of manufacturing defects. Warranty service applies only to equipment that has been operated and maintained in accordance with the instructions and guidelines outlined in this manual.

This warranty does not cover:

- Damage caused by misuse, abuse, neglect, or improper operation
- Damage caused by improper transport, lifting, mounting, or storage
- Electrical damage resulting from reverse polarity, improper power sources, short circuits, or unauthorized wiring modifications
- Damage caused by water intrusion, weather exposure, flooding, or environmental contamination
- Consumable items or cosmetic wear
- Damage caused by unauthorized repairs or modifications
- Damage resulting from use outside the intended application of the equipment
- Freight or shipping costs associated with warranty claims

Any modification to the VPEG system, controller, wiring, mounting systems, or associated components without written authorization from R.T. Clark Co., Inc. voids this warranty. Warranty claims must be submitted with proof of purchase and a description of the issue encountered. R.T. Clark Co., Inc. reserves the right to inspect returned equipment prior to approval of warranty coverage.

Use Disclaimer

The VPEG eVib system is a professional geophysical energy source intended for use only by trained personnel familiar with seismic acquisition equipment, electrical systems, lifting procedures, and field safety practices. Operation of the VPEG system involves DC electrical power systems, heavy equipment, moving mechanical assemblies, and generated vibrational energy. Failure to follow proper operating procedures may result in equipment damage, personal injury, or death.

Users are responsible for:

- Ensuring all operators are properly trained
- Following all applicable local, state, and federal safety regulations
- Inspecting equipment prior to each use
- Using appropriate lifting and transport methods
- Ensuring safe field conditions prior to operation
- Verifying proper electrical connections and battery polarity
- Maintaining safe distances from operating equipment

R.T. Clark Co., Inc., assume no liability for damages, injuries, downtime, data loss, or consequential losses arising from misuse, improper operation, unauthorized modification, or operation outside the intended use of the equipment.

The VPEG system is not certified for operation in explosive atmospheres or hazardous classified environments unless specifically stated in writing. Specifications, features, and operational capabilities are subject to change without notice as part of ongoing product development and improvement.

Appendix A - Quick Start Checklist

1. Inspect the unit, mount, cables, and work area.
2. Confirm power switch is OFF.
3. Connect battery with correct polarity.
4. Connect GPS and Wi-Fi antennas.
5. Connect manual start or trigger cable if required.
6. Insert USB flash drive if using USB backup.
7. Turn power switch ON and allow controller to boot.
8. Connect tablet or PC to eVib Wi-Fi.
9. Open NavLink VPEG or NavLink.
10. Confirm GPS, unit ID, group ID, sweep table, trigger settings, and communication.
11. Confirm VPEG is stable and coupled to the ground.
12. Start sweep from software or manual push-button.

Appendix B - Daily Safety and Inspection Checklist

Check	OK	Notes
Battery polarity confirmed before connection	☐	
Power switch OFF before connecting/disconnecting battery	☐	
No damaged cables or exposed conductors	☐	
Connector panel clean and dry	☐	
Mounting hardware tight	☐	
Retention straps/chains installed where applicable	☐	
Baseplate and frame inspected	☐	
GPS and Wi-Fi antennas connected	☐	
Crew clear before sweep initiation	☐	
Unit stable and coupled before sweep	☐	
USB records backed up at end of day	☐	
Unit secured for transport	☐	