

# VBC7000 Series Seismic Detector Installation Manual



Thank you for purchasing the VBC7000 Series Seismic Detector.

This manual contains information for ensuring the correct use of the VBC7000. It also provides necessary information for installation, maintenance, and troubleshooting.

This manual should be read by those who design and maintain equipment that uses the VBC7000. Be sure to keep this manual nearby for handy reference.

Please, read the 'Terms and Conditions' from the following URL before order or use:

<http://www.yamatake.com/products/bi/order.html>

## NOTICE

Be sure that the user receives this manual before the product is used.

Copying or duplicating this manual in part or in whole is forbidden. The information and specifications in the manual are subject to change without notice.

Considerable effort has been made to ensure that this manual is free from inaccuracies and omissions. If you should find an error or omission, please contact Yamatake Corporation.

In no event is Yamatake Corporation liable to anyone for any indirect, special or consequential damages as a result of using this product.

©2009 Yamatake Corporation ALL RIGHTS RESERVED



## WARNING

Warnings are indicated when mishandling this product might result in death or serious injury.



## CAUTION

Cautions are indicated when mishandling this product might result in minor injury to the user, or only physical damage to the product.



## WARNING

- Before wiring the VBC7000, be sure to turn the power off. Failure to do so might cause electric shock.



## CAUTION

- Be sure to read the installation manual before using this device. Improper use could result in damage to the device or equipment, and may cause bodily injury.
- Do not install the device in places below. Faulty operation, fire, or explosion could result.
  - On a steep incline
  - In a place that is normally subject to vibration, or that receives shock from an opening and shutting door, etc.
  - Where the temperature or humidity is high
  - Where there is water droplet spray or excessive dampness
  - In a place subject to magnetic fields
  - Where there is dust or corrosive gas
  - Where there is flammable or explosive gas
- Do not use this device as a step, or subject it to unreasonable force. Product damage or user injury could result.
- To avoid malfunction, never remove the cover.
- Make sure that the locking screw is fastened before transporting the device. Otherwise the sensor may be damaged by vibration or impact.
- Do a functional check at least once a year, and check the Gal response level at least once every three years.

## 1. Overview

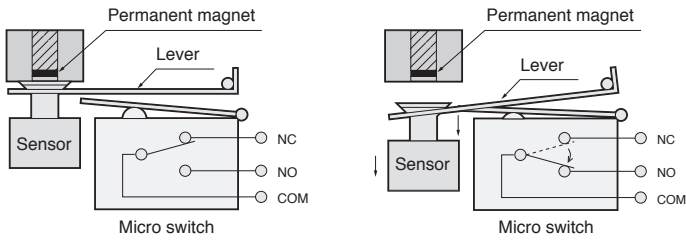
The VBC7000 series seismic detector can be installed in industrial or workplace environments to prevent secondary damage in the event of an earthquake by preventing the release of harmful gases, performing emergency shutdown of equipment, activating an alarm, etc.

### ■ Main Features

- Depending on the intended use of the detector, fifteen models are available for accelerations from 12 to 250 Gal.
- Faulty activation is minimized as the unit's construction makes it difficult for it to be activated by non-earthquake high frequency vibrations from sources like machinery or dump trucks.
- Functional checks can easily be performed after mounting or installation.
- The operating status can be checked visually in the indication window, which changes from green to red when the detector is activated.

## ■ Operating principle

Normally the internal sensor is attached to a permanent magnet, as shown below. If an earthquake occurs and the sensor is subjected to a force that exceeds the selected horizontal acceleration, the sensor instantly drops and presses a lever, which activates a micro switch.



### ! Handling Precautions

If the locking screw is fastened, the sensor is pushed up and is unable to drop. The locking screw must be removed before use.

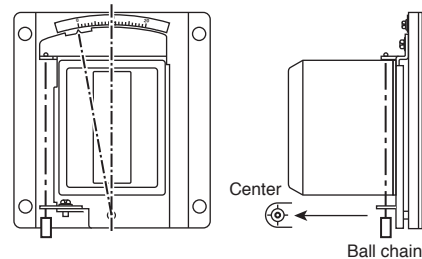
## ■ Installation

1. Hold a plumb line against the wall or pillar where the detector is to be mounted and determine the position of the mounting holes using this line as a datum.
2. Attach the detector firmly using four M6 screws in the four mounting holes.
3. After loosening the two level adjustment screws and the level adjustment nut, move the base back and forth and around so that the ball chain is not in contact with the perimeter of the level hole, and then fasten the screws and nut temporarily. Adjust the base carefully so that the ball chain is positioned in the center of the level hole, and tighten the screws and nut securely.

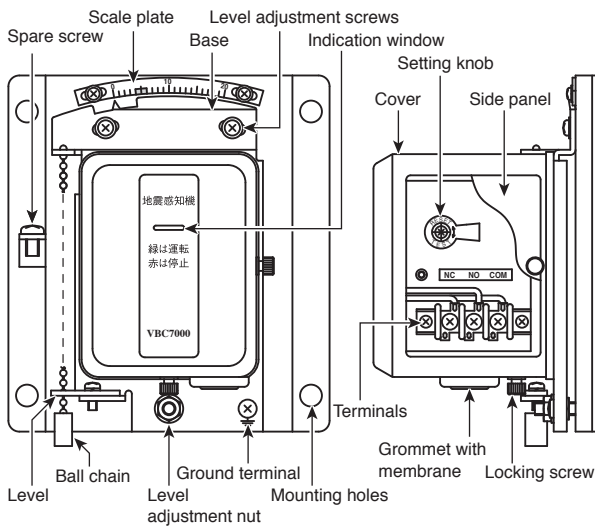
### ! Handling Precautions

If the ball chain is touching the perimeter of the level hole, faulty operation may occur.

4. Adjust the scale plate so that the "0" is in line with the pointer on the base, and fasten securely.



## 2. Part names



## ■ Wiring

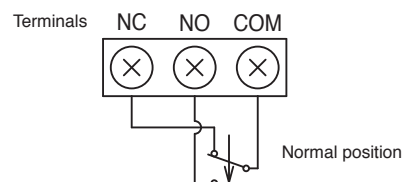
### ! CAUTION

- Do the wiring work in conformity with the electric facility technical standards.
- The grommet membrane protects against dust. Cut it only where necessary for the wires to pass through.
- Do not put wire around the setting knob.
- Connect the ground terminal to the earth. Otherwise if there is an insulation failure or the like, there will be an electric shock hazard.

## 3. Installation and wiring

### ! CAUTION

- To prevent electric shock, connect the wiring for the power last.
- Check the wiring before turning the power on. Otherwise electric shock or damage to the device may occur.
- Mount the device on a firm wall or pillar. Otherwise a malfunction may occur.
- Mount the device vertically, using the level, to prevent malfunction.
- Never remove the cover. Doing so might cause a malfunction.



1. Loosen the side panel retaining screw and remove the side panel.
2. Pass insulated wires through the grommet membrane.
3. Connect the wires to the terminals.
4. After wiring, re-attach the side panel.
5. After installation and wiring, remove the locking screw and replace it with the spare screw to protect against dust. Keep the locking screw in case there is a need to move the detector in the future.

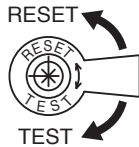
## 4. Operation

### ■ Functional check and setting

**SET:** Gently rotate the setting knob to the RESET side until it stops. The detector is now set and the display window turns green.

**TEST:** Rotate the set dial to the TEST side to activate the detector, and the display window turns red. Check that the electrical contacts are operating correctly.

After testing by turning the knob between RESET and TEST two or three times, turn it to RESET to begin operation.



## 5. Maintenance



### CAUTION

- In conjunction with the periodic inspection of equipment or machinery, do a functional check at least once a year, and a Gal response level check at least once every three years.
- Replace the detector if any abnormality is found in the functional or Gal checks.
- Before transporting, be sure to fasten the locking screw. Otherwise vibration or shock may damage the detector.

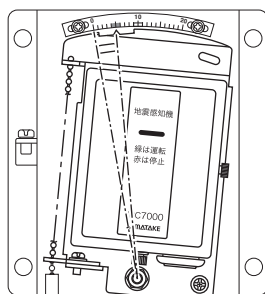
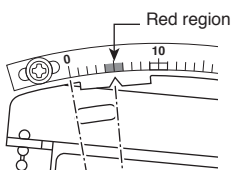
### ■ Gal response level check

1. Remove the side panel.
2. Loosen the level adjustment nut sufficiently so that the base can be moved left and right, and remove the two level adjustment screws.
3. Using the level adjustment nut as the axis of rotation, gently rotate the base clockwise and note the pointer indication on the scale when the device is activated. Repeat this procedure two or three times, and check that the average reading falls within the red region of the scale.

### ! Handling Precautions

In this procedure, slight variations in the reading may occur according to the adjustment of the level at the time of installation and the zero adjustments for the scale plate, in addition to the way in which the base is rotated.

4. After the inspection has been completed, return the detector to its former state, and fasten securely.

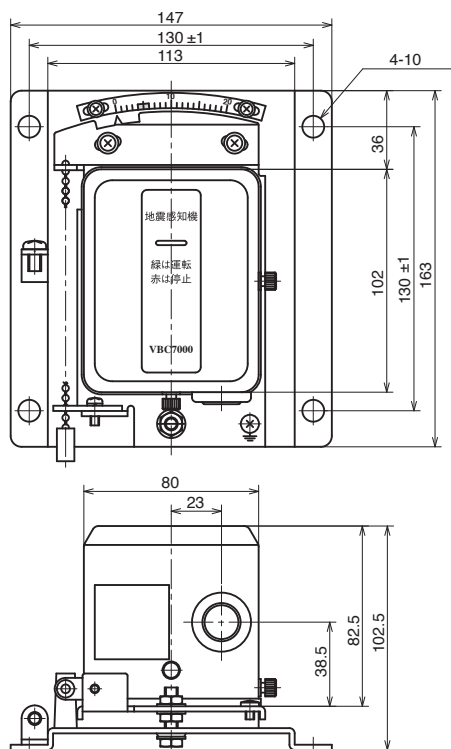


## 6. Specifications

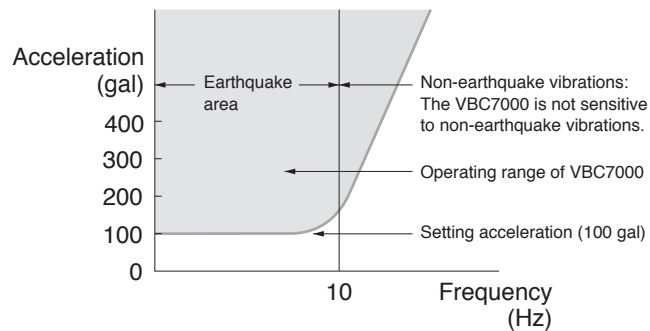
	Item	Specification
General	Name	Seismic detector
	Detection method	Magnetic
	External dimensions	147×163×102.5 mm (W×H×D)
	Mass	Approx. 1.6 kg
	Color	Blue
	Mounting	Indoor, on firm wall or pillar surface (level for vertical mounting is provided). Retaining screws: M6 (4) Mounting pitch: 130×130 mm
	Terminal box	M3.5 terminal screws
	Conduit	Dia. 15 mm, grommet with membrane
	Allowable temperature	-10 to +50 °C (no high humidity or corrosive environments)
Performance	Sensing direction	Horizontal and vertical
	Operation indication	By change of color in indication window: green for Run (reset), red for Stop (tripped out)
	Setting	Set manually with setting knob
	Operation check	Manual
	Acceleration setting check	Gal response level check by tilting the detector
Electrical	Contact form	SPDT (single pole double throw)
	Contact rating	125/250 Vac, 10 A with resistive load, 2 A with motor load (power factor 0.4)
	Contact material	Silver alloy
	Insulation resistance	100 MΩ or more (500 Vdc megger)
	Dielectric strength	1500 Vac, 1 min

## External Dimensions

Unit: mm



## Operating characteristics



## VBC7000 series models

Unit: Gal

Model number	Acceleration setting
VBC7000-012	12 ± 7
VBC7000-015	15 ± 10
VBC7000-020	20 ± 14
VBC7000-025	25 ± 15
VBC7000-030	30 ± 15
VBC7000-040	40 ± 16
VBC7000-060	60 ± 18
VBC7000-080	80 ± 20
VBC7000-100	100 ± 22
VBC7000-120	120 ± 24
VBC7000-135	135 ± 26
VBC7000-150	150 ± 27
VBC7000-200	200 ± 32
VBC7000-225	225 ± 35
VBC7000-250	250 ± 37

**Yamatake Corporation**  
Advanced Automation Company

1-12-2 Kawana, Fujisawa  
Kanagawa 251-8522 Japan

URL: <http://www.azbil.com>

**azbil**

Specifications are subject to change without notice. (08)

1st Edition: Issued in Feb. 2009 (S)