

# VIGILANT

## INSTALLATION

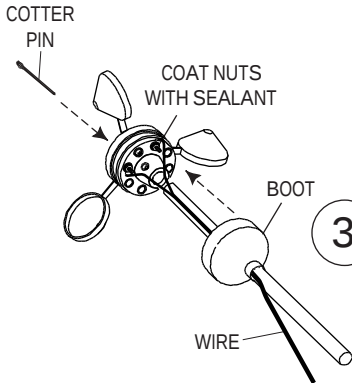
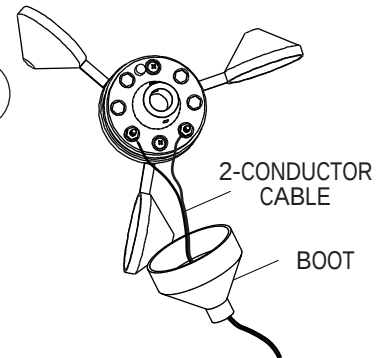
PROPER INSTALLATION IS IMPORTANT. IF YOU NEED ASSISTANCE, CONSULT A CONTRACTOR ELECTRICIAN OR TELEVISION ANTENNA INSTALLER (CHECK WITH YOUR LOCAL BUILDING SUPPLY, OR HARDWARE STORE FOR REFERRALS). TO PROMOTE CONFIDENCE, PERFORM A TRIAL WIRING BEFORE INSTALLATION.

1

Determine where you are going to locate both the rooftop sensor and the read-out.

2

Feed the terminal lug end of the 2-conductor cable through the rubber boot and connect the lugs to the terminals on the bottom of the wind speed sensor. (DO NOT adjust the nuts that are already on the sensor). The polarity does not matter.

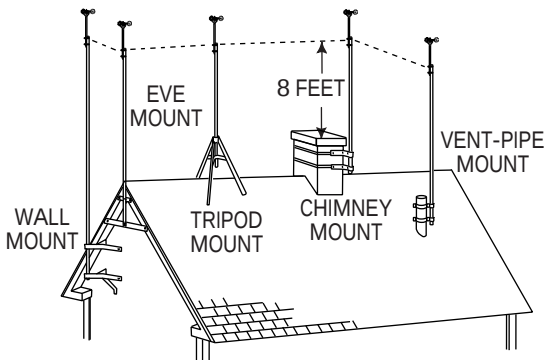
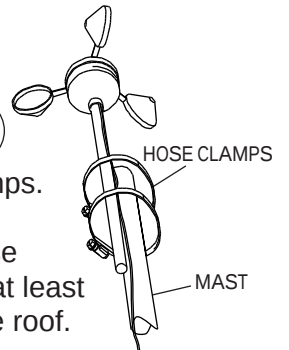


3

Slide the stub mast through the rubber boot and insert the stub mast into the bottom of the wind speed sensor. Secure with the cotter pin. Coat all wire connections with silicone sealant and slip the boot over the sensor.

4

Secure the sensor and the stub mast to your antenna mast (not supplied) with the two hose clamps. Radio Shack and similar stores have a selection of antenna masts and roof mounting brackets. Choose a mount that best suits your location and provides at least eight feet of vertical clearance above objects on the roof.

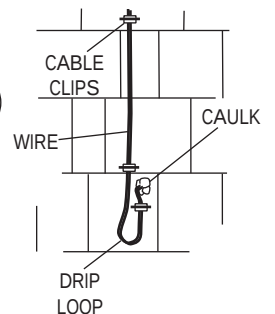


5

Follow the instructions supplied with the antenna mount and secure the mast to the mount.

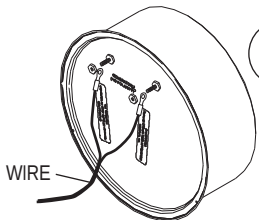
Secure the wire to the building using cable clips (do not use regular staples). Form a drip loop where the wire enters the hole drilled through exterior wall. Caulk the hole when done.

6



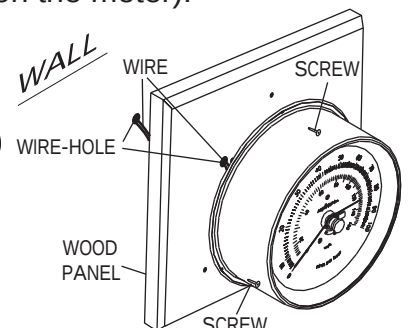
7

Feed the cable through the wall to where the read-out is going to be located. Attach the wires to the rear of the read-out as shown. (Do NOT adjust the nuts that are already on the meter). The polarity does not matter.



Mount the read-out directly over the cable feed-thru-hole to avoid crimping the wire under the lip. We recommend mounting the read-out on one of our pre-drilled and centered wood panels.

8



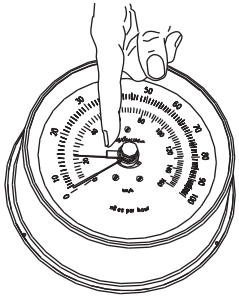
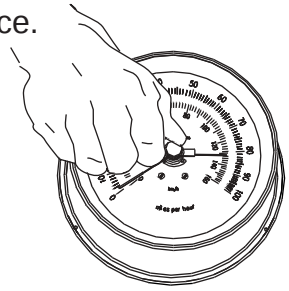
MAXIMUM INC.

# VIGILANT

## OPERATION

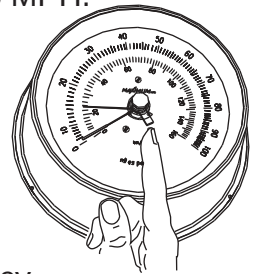
The Vigilant is a self-powered wind speed measuring instrument. It does not need batteries or an external power supply. In normal operation, it requires no maintenance.

To reset the gust register needle, turn the knob counter-clockwise.



Turning the knob counter-clockwise will eventually contact the gust register. The Gust Register should not be set under 15 MPH - this gives the needle room to operate at low speeds. If the Gust Register is set below 15 MPH turn the knob clockwise until the needle registers greater than 15 MPH.

After setting the Gust Register turn the knob clockwise until the reset arm is parked near the six o'clock position. Failure to do so may damage your meter.



## ADDITIONAL INFORMATION

Cables can be shortened or lengthened without affecting accuracy

| WIRE GAUGE                    | MAXIMUM FEET WITHOUT RECALIBRATION | WIRE GAUGE | MAXIMUM FEET WITHOUT RECALIBRATION |
|-------------------------------|------------------------------------|------------|------------------------------------|
| 24                            | 300'                               | 16         | 2000'                              |
| 22 (supplied with instrument) | 500'                               | 14         | 3200'                              |
| 20                            | 750'                               | 12         | 5000'                              |
| 19                            | 1000'                              | 10         | 8000'                              |
| 18                            | 1250'                              |            |                                    |

## TROUBLE SHOOTING

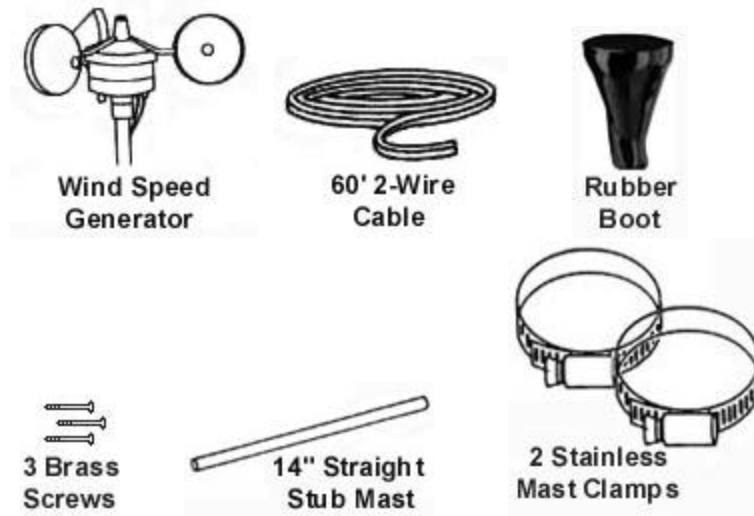
Maximum Instruments are accurate and reliable. Most problems that occur are due to loose or corroded connections. If, after checking the connections, there is still a problem, determine if the problem is with the sensor or the brass read-out.

- If there is wind
- ① Disconnect the wires from the back of the brass read-out.
  - ② Attach a low range AC *Voltmeter* to the wires. If the sensor is operating properly, you will achieve these approximate readings (using 20,000 ohms per volt): 8-9 MPH = 0.28 Vac rms, 17 MPH = 0.56 Vac rms, 51 MPH = 1.78 Vac rms, 102 MPH 3.67 Vac rms
  - ③ If the sensor delivers these approximate readings, then the brass read-out is faulty. If the sensor does not produce these readings, then either the sensor or the wire is faulty.
- If there is no wind
- ① Disconnect the wires from the back of the brass read-out.
  - ② Connect an *ohm meter* to the wires.
  - ③ The *ohm meter* should indicate between 1,000 and 2,000 ohms.
  - ④ If there is a good reading on the *ohm meter*, then the brass read-out is faulty. If the reading is bad, then the sensor or wire is faulty.

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## IMPORTANT ADDITIONAL INFORMATION

**Components:** Along with the indicator, the following components are included with this instrument:



**Rooftop sensor:** To insure a clear unobstructed path for the wind to the sensor, it should be mounted on some type of antenna mast at least 8-10' above the highest object on your roof. Remember, your roof is also an obstruction and it usually requires at least 8' of height to avoid the turbulence it creates.

**Sensor:** Properly installed, your sensor will require virtually no maintenance at all. Our sensors do not utilize brushes or wiping contacts. All bearings are Rulon-J self lubricating type and will perform for many years in the harshest environments.

**Brass Case:** Your brass case is solid brass A70-30 Holloware quality, with a durable lacquer finish. It is in fact a piece of jewelry and should be treated as such. It should be cleaned at least once a week to keep airborne pollutants (dust, etc...) and any moisture from collecting on the case thereby attacking the lacquer. At no time should you use an abrasive cleaner or cloth on the brass case. Simply use a soft cloth or soft paper towel with a mild glass cleaner to wipe the case clean. If your instruments are in a summer home, and you are not able to clean them regularly, simply lay a small cloth or towel across the top two-thirds so that dust cannot settle on the finish.

**Specifications:** All instrumentation or measuring devices have accuracy tolerances and specifications. Making comparisons between different pieces of equipment is appropriate provided the specified accuracies of both are known.

|                      | Measurement Range | Guaranteed Accuracy        |
|----------------------|-------------------|----------------------------|
| Wind Speed           | 0-100 MPH         | ±3% Full Scale & Mid Scale |
| - with Scale Doubler | 0-200 MPH         | ±3% Full Scale & Mid Scale |



## Electrical Damage – Common Causes & Recommended Prevention

Electrical damage can be caused by many different factors. Below are some of the more common causes and some suggested methods of minimizing potential problems.

### Common Causes:

- **Storm Activity** – lightening in your area can do damage to your instruments in different ways. The obvious way is due to a direct or nearby strike. In addition, lightening storms, dust storms, dry snowstorms and strong dry winds can all cause static electricity to build up on and around your external sensors. Regardless of the cause this built up electricity can discharge itself through the cable connecting the external sensors to the instrument.
- **Power Surges** – A surge may come from the electric company's switching generators or power grids, from local industries or after power interruption when accumulated power suddenly surges back through AC lines. Even the on-and-off switching of large electrical appliances, such as refrigerators or clothes dryers can create damaging fluctuations. This is especially true with sensitive weather recording devices.
- **Yourself** – Are you constantly giving and/or receiving a shock every time you touch a doorknob or another person? If so you have a great deal of static electricity in your environment. Depending on where you live, static electricity may be a year round problem or only a seasonal problem. In either case, it is possible for a person to carry enough of a charge to damage an instrument.

### Recommended Prevention:

- **Ground Your Mounting Mast** – **IMPORTANT:** PVC and fiberglass are not recommended mast materials as they can store high amounts of static electricity within themselves. It is recommended that you follow the grounding instructions that came with your mounting mast, while also maintaining accordance to your local Electric Code. In the absence of instructions for your mast system, the following generic guidelines from the **National Electric Code** may be helpful.
  - 1) The NEC requires that the antenna mast and mount be grounded directly. No splices or connections are allowed in the ground wire between the mast and the ground rod.
  - 2) Attach one end of a No. 8 (or thicker) copper or aluminum ground wire to the antenna mast. **Note:** As static electricity issues are more common for weather sensors than direct lightening strikes, consider installing the ground wire as physically close to the wind sensors as possible to best combat static electricity issues. For multi-piece (or telescoping) masts, consider connecting the ground to each separate section of the mast.
  - 3) For painted or coated masts, scrape off the coating around the area where the contact will be made. This will ensure a good, solid connection. (Once the ground is attached to the mast, any scraped off portion that is exposed should be recoated with paint or other sealant.)
  - 4) Next, run the ground wire to ground as directly as possible. Standard wire staples can be used to secure the ground wire against the side of the house. Avoid making 90° or sharper turns with the ground wire. A lightning charge has difficulty making such a turn and therefore may discharge into the house. Make ground wire bends as smooth and as gradual as possible.
  - 5) The ground wire must be connected to a ground rod. Water pipes or plumbing fixtures are not acceptable. A good copper-coated steel ground rod driven at least 3 feet into the ground is required. Special clamps that provide a solid connection between the ground wire and ground rod should be used
- **Use Surge Protectors** – For the AC adapter, a UL 1449 rated surge protector with EMI/RFI filtering is recommended. This rating will be clearly listed on the packaging of any good quality surge protector.
- **Discharge Yourself** – If the instruments are located in an environment where static electricity is a problem, make sure that you discharge yourself before touching the instrument(s). The shock that you get from touching a doorknob or another person can often be sufficient to damage an instrument.