

Instruction Manual for No. 7760-00 3-Cup Anemometer

This is an anemometer, composed of a sensor of 3-cup assembly (AC generator type) and an indicator.

Specifications

1. Sensor (Generator)

Type of sensor	: 3-cup assembly - AC generator (four poles, non iron core)
Starting wind speed	: less than 2 m/s
Withstand wind speed	: less than 90 m/s
Output voltage	: 30 ± 1 VAC at 60 m/s (output impedance: approx. 500 ohm)

2. Indicator

Type	: Rectifier type voltmeter (desk-top type)
Scale Range	: 0 to 60 m/s Min. scale: 1 m/s (more than 2 m/s)
Allowable error	: Within ± 0.5 m/s at less than 10 m/s Within $\pm 5\%$ for the value at more than 10 m/s

Principle of measurement

1. Generator

Rotation of the 3-Cup assembly is transmitted to an AC generator. The AC voltage which is proportional to wind speed is output.

2. Indicator

AC voltage from the generator is turned to DC voltage by a rectifier and the DC voltage operates moving-coil type voltmeter.

Wiring

1. Generator

A short cord (approx. 1 m) is connected with the generator. The black and white wires of the short cord are used for the output of generator. Connect these to the indicator.

2. Indicator

Connect the wires with the terminals below the switch. There is no polarity since this is AC input.

Cautions at wiring between generator and indicator

If the wire resistance becomes large, it leads to error on indication of wind speed (about -1% at 200 ohm per wire, 2.5km at 0.5mm², 3.5km at 0.75mm²). Use shield cord when it may be induced by transmission antennas and etc. Make sure to separate the cord from high-voltage circuit.

Caution on installation

1. The wind speed sensor should be installed on a flat surface in an open space with a supportive pole, at a height of 10 m above the ground (standard installation place). “Open space” here means that the distance between the generator and any obstacle is at least 10 times (desirable: more than 20 times) the height of the obstacle. If there is no such place available, choose the next-best place.
2. If installing the instrument on a rooftop, avoid the effects of wind turbulence by choosing a place nearest to the center of the rooftop and mounting the instrument on a pole 2 m above the roof surface. It is desirable that before installing, check for wind turbulence by using a flag or the like and then determine the optimal place and height for the instrument.
3. Install the wind speed sensor in a place free of vibration or corrosive gas. The product life will be shortened if it is installed in a place subject to vibration, corrosive gas or direct saltwater splashes.

Maintenance

1. Sensor

- 1) It is desirable to check the following point once a year.

Check that the cup assembly is rotating smoothly when the wind is weak (about 2 m/s).

Or it does not rotate smoothly even if the cup is turned by hand, it is necessary to oil the unit or change the ball bearings. In this case, contact us our distributor or us.

- 2) Inspect or overhaul sensor every five year

2. Indicator

- 1) Maintenance is not particularly needed, however it is desirable to inspect or overhaul the indicator with the sensor every five year
- 2) Inspect or overhaul the indicator with sensor every five year

Trouble shooting

The pointer in indicator does not move although the sensor rotates.

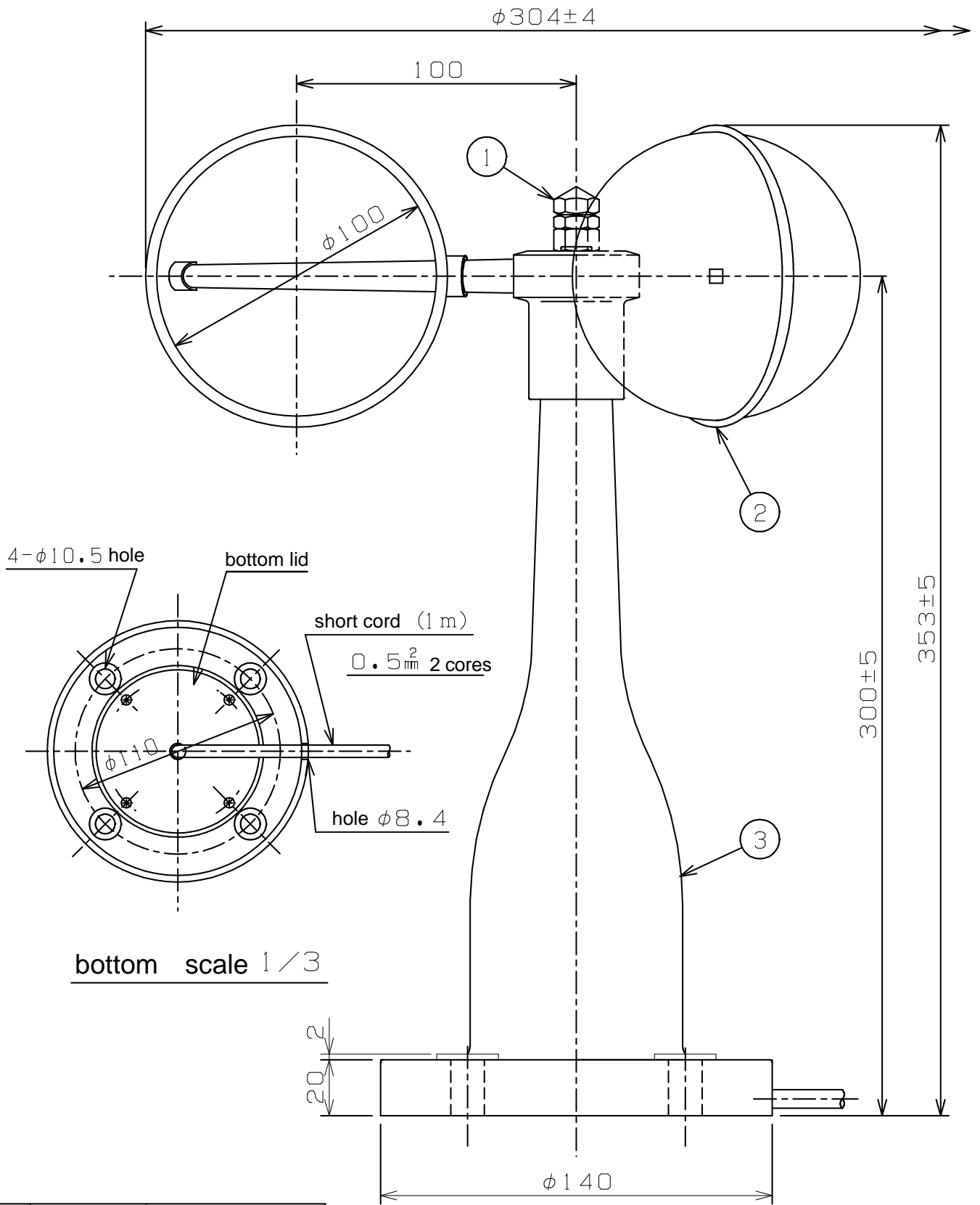
1. Check that the switch is ON position. If it is ON, turn it off once and ON again.
2. Apply the tester with range of 10 to 50 V to the input terminal No. 1 and No. 2 of indicator.
 - A) If there is no voltage, it must be a poor connection of wires or the generator is out of order. Apply the tester to the connection of generator. If there is output, wires are snapped or wire connection is poor.
 - B) If there is voltage at the terminal of indicator, something inside of indicator will be out of order.

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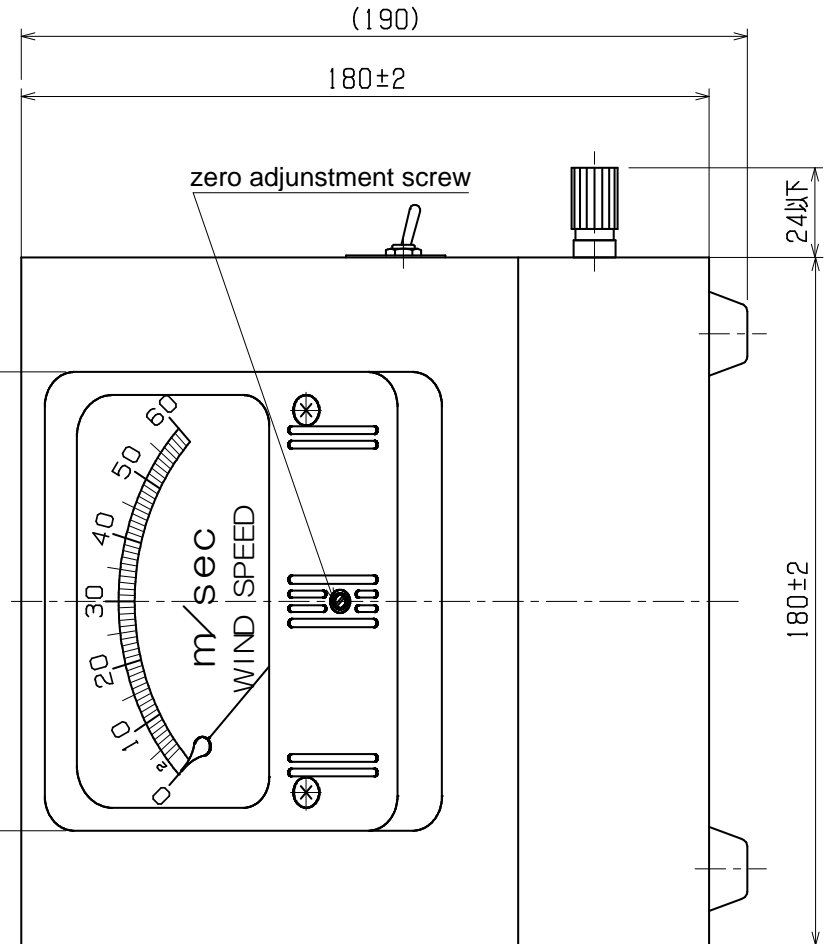
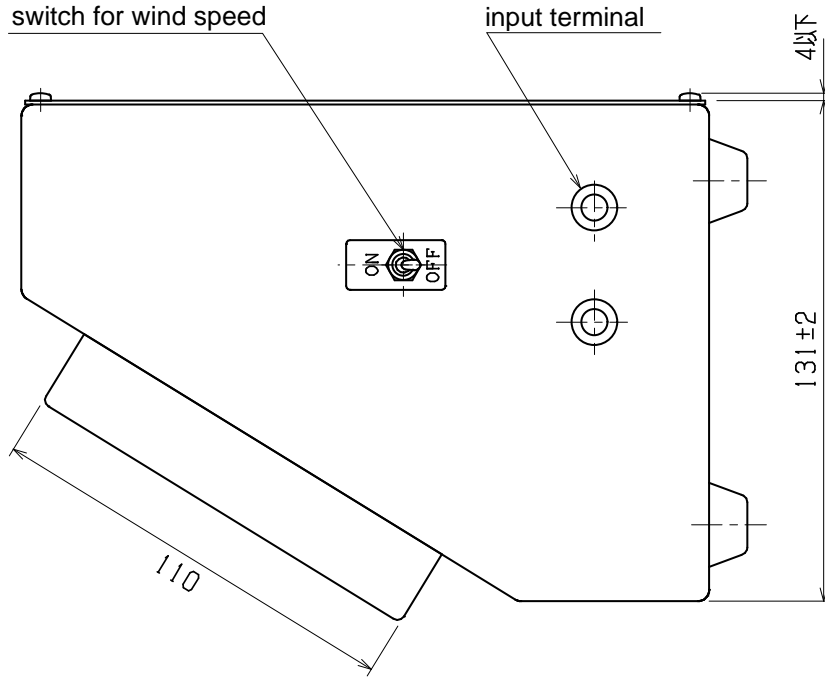


3	main unit	Polycarbonate resin glass 10%
2	3-Cup assembly	Polycarbonate resin
1	holding nut	SUS303
No	Name	Materials

COLOR (塗装色)	MASS (質量)	CHIFE	CHECK	DRAWN
5GY6/1	1 kg			川合
DATE (月日)	SCALE (尺度)	REG. NO.	DWG. NO.	
1999.01.18	1/2	(整番)	(図番)	800-097

3-Cup Anemometer

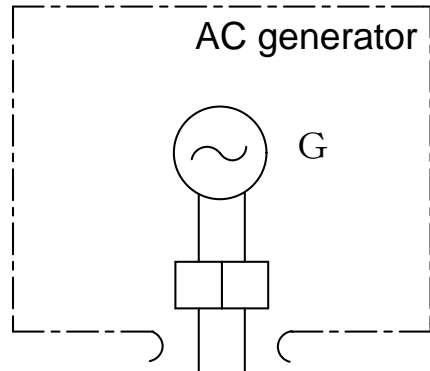
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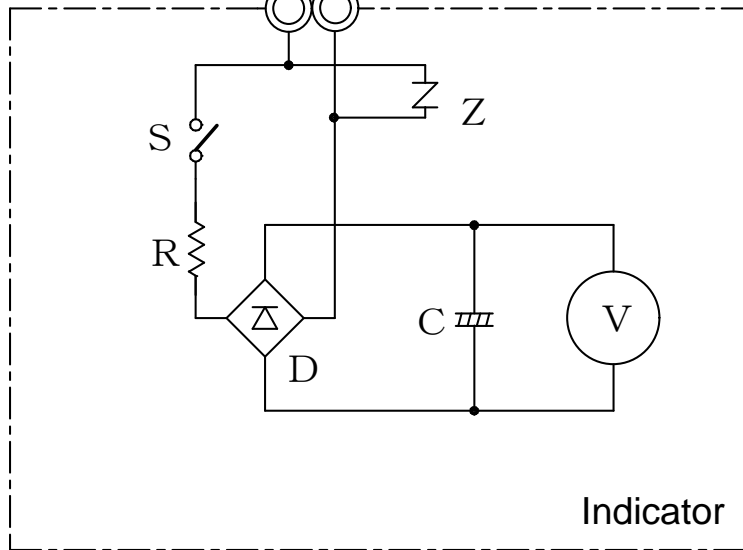
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COLOR (塗装色)	MASS (質量)	CHIFE	CHECK	DRAWN	Wind Speed Indicator	
	約1.7kg			鳴島		
DATE (用)	SCALE (尺度)	REG. NO.			DWG. NO.	810-100
2000.8.30	1/2	(整番)			(図番)	

Code	Name
G	AC Generator for wind speed
V	Voltmeter for indication
C	Condenser
D	Rectifier
R	Resistance
Z	Serge absorber
S	Switch for wind speed



Use shield cord when it may be induced by transmission antennas and etc.



COLOR (塗色)	WEIGHT (重量)	CHIFE	CHECK	DRAWN	Wiring 3-Cup Anemometer
				川合	
DATE (月日)	SCALE (尺吋)	REG. NO.			DWG. NO.
1998 10 12		(整番)			(図番) 960-067

How to Install 3-Cup Assembly

3-cup sensor is factory installed before shipment. Do not tighten the retaining nut further.

To replace the 3-cup assembly, follow the procedures mentioned below.

1. Confirm that the collar is installed in the rotary axis.
2. In installing the 3-cup sensor, put it on the collar.
3. How to tighten nuts
 - ① Put the lower nut in and tighten it by hand. (torque: about $19\text{kg}\cdot\text{cm}$ ($1.86\text{N}\cdot\text{m}$))
 - ② Put the upper nut in.
 - ③ Fix the lower nut with a spanner not to let the nut turn and tighten the upper nut firmly with another spanner. (torque: about $30\text{kg}\cdot\text{cm}$ ($29.4\text{N}\cdot\text{m}$))
 - ④ To remove the 3-cup assembly, reverse this order.

