R180
WIRELESS WIND SPEED INDICATOR
Installation and Operation Manual

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The purpose of this manual is to provide the customer with the operating procedures essential for the promotion of proper machine operation for its intended purpose. It is important to over-stress proper usage. All information in this manual should be read and understood before any attempt is made to operate the machine.

Since the manufacturer has no direct control over machine application and operation, conformance with good safety practice in this area is the responsibility of the user and his operating personnel.

All procedures herein are based on the use of the system under proper operating conditions, with no deviations from the original design. Alteration and/or modification of the equipment is strictly forbidden without written approval from RaycoWylie Systems.

The R180 WindSpeed Indicator is to be regarded only as an aid to the operator.

This system must never be used, under any circumstances, as a substitute for the good judgment of a crane operator when carrying out approved crane-operating procedures. Responsibility for the safe operation of the crane lies with the crane operator. The indicator equipment will not necessarily prevent crane damage due to overloading and related causes if not set properly.

Before operating a crane equipped with a Wylie system indicator, the operator must carefully read the information in both this manual and the crane manufacturer operator's manual. He must also have read and understood federal, state and local regulations applicable to his job. Correct functioning of the system depends upon routine daily inspection.

Any suspected faults or apparent damage should be immediately reported to the responsible authority before using the crane.

Since safety of personnel and proper use of the machine is of primary concern, different symbols are used throughout this manual to emphasize certain areas. The following definitions indicate the level of hazard when these symbols appear throughout this manual.

Whenever one of these symbols appears in this manual, personnel safety is a concern. Please take time to read and understand these definitions!

DANGER: INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.

CAUTION: INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY. IT MAY ALSO BE USED TO ALERT AGAINST UNSAFE PRACTICES.

IMPORTANT: INDICATES A SITUATION THAT MAY CAUSE MACHINE DAMAGE IF NOT CORRECTLY FOLLOWED.

NOTE: PROVIDES INFORMATION THAT MAY BE OF SPECIAL INTEREST.

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GENERAL DESCRIPTION OF THE SYSTEM

1.1 Introduction

The Wireless Wind Speed Indicator (R180) is designed as an aid to the crane operator. It eliminates guesswork by measuring and clearly indicating the wind speed to the crane operator. The R180 has a user adjustable maximum wind speed limit. A visual and audible warning is also given if the wind speed exceeds the preset warning limit. Furthermore an output electrical signal is generated which can be used to activate lockout function or others as light or siren.

The indicator consists of two basic elements:

A) A display unit in the cab, showing the wind speed in the unit chosen by the operator and giving warning signals should the limit be exceeded

B) A wireless wind speed sensor, which measures the wind speed and send the value to the Display unit by radio link to bring live readings on screen.

1.2 Warning

When using R180 system, always observe the safety rules and regulations applicable in the country of operation to reduce the risk of personal injury or damage to the equipment. Each safety instruction throughout this manual must be taken into consideration when using the R180 system. The information contained in this manual will enable qualified personnel to properly operate and efficiently perform maintenance.

1.3 Component Description

1.3.1 Display Unit

The display is mounted in a convenient position in front of the operator's working area.

The display unit has 3 operating modes allowing different functions:

1) Normal Mode
2) Limit setting Mode
3) System setting Mode

These modes will be described more in detail in the operating section of this manual.

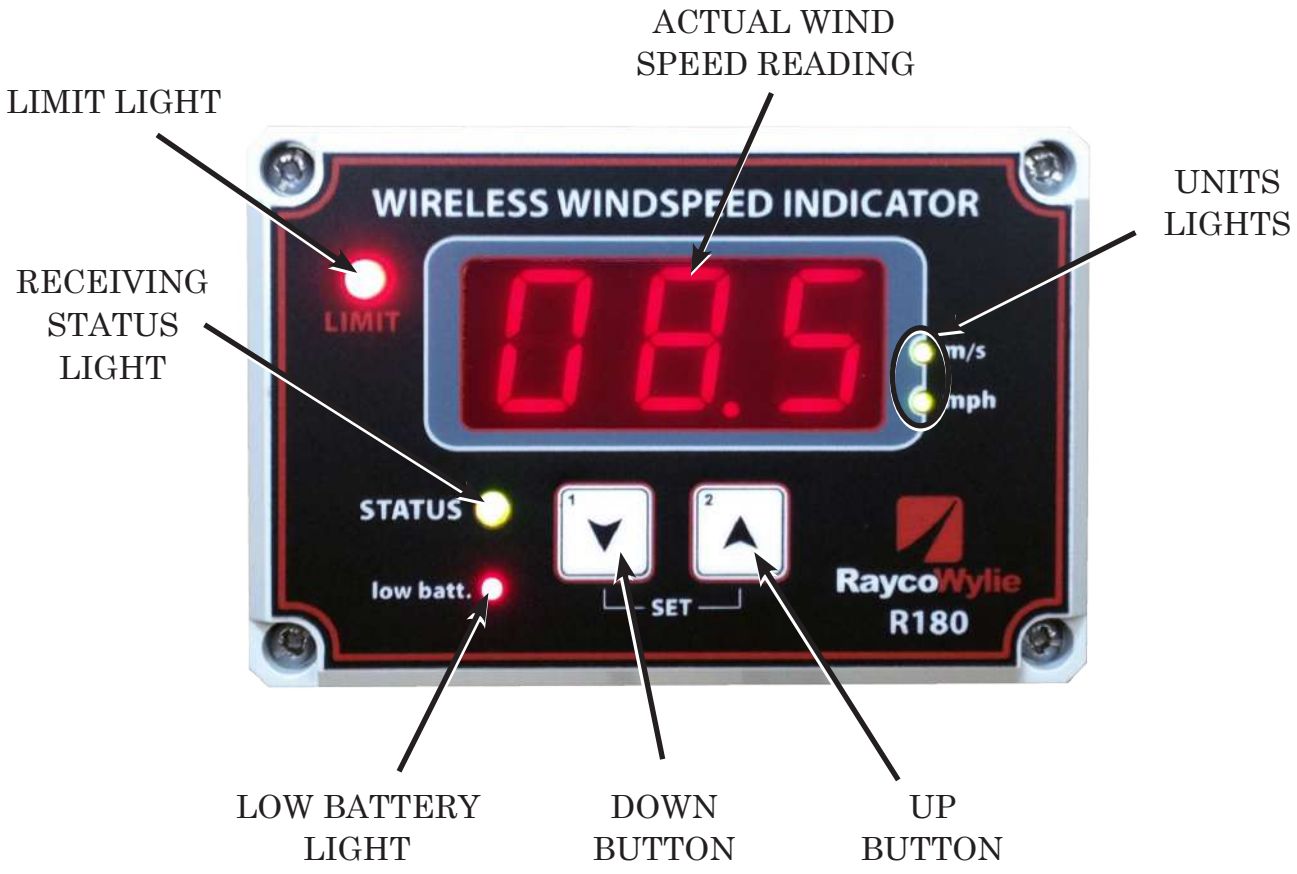

Fig 1: R180 Display box

1.3.2 Wireless Wind Speed Sensor

There are two different versions of the R180, refers to the following pictures to determine the version you own.

The legacy version (33M0098)

Fig 2: Legacy version wind speed sensor complete assembly

The wind speed sensor is delivered with a mounting bracket that allows the sensor to stay perpendicular to the ground at all boom angles.

The transmitter unit contains the battery and the transmitting antenna.
The wind cup must be fully exposed to the wind and spin freely at all boom angles

The current version (33M0150)

Fig 3: Current version wind speed sensor complete assembly

The wind speed sensor can be delivered with a mounting bracket that allows the sensor to stay perpendicular to the ground at all boom angles.

The transmitter unit contains the battery and the transmitting antenna. The anemometer must be fully exposed to the wind and spin freely at all boom angles

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OPERATING PROCEDURE

2.1 Power On

Switch on the electrical supply (ie crane key switch) to the R180 system. During the time the indicator is waiting for a valid radio transmission from the wind speed sensor, the display will show three horizontal lines and the green status light will flash.

Fig 4: R180 Waiting for transmission from the wind speed sensor

Once a reliable radio communication link is established with the wind speed sensor, the wind speed value will be displayed and the green status light will remain on without flashing.

If the status light flashes continuously for more than 30 seconds, it means the display has not received a valid message from the wind speed sensor. Check if the paper tag insulating the battery contacts has been properly removed. It can also be incorrectly programmed to receive the wrong wind speed sensor. To correctly program the R180 follow the programming ID number procedure described at page 25.

2.2 Units

The R180 indicates wind speed in miles per hour (mph), meters per second (m/s) or kilometers per hour (km/h). Current units are indicated by a green light “on” beside the selected unit. To change units press simultaneously the Down and Up button. Note that the Limit set will be automatically converted in the new unit.

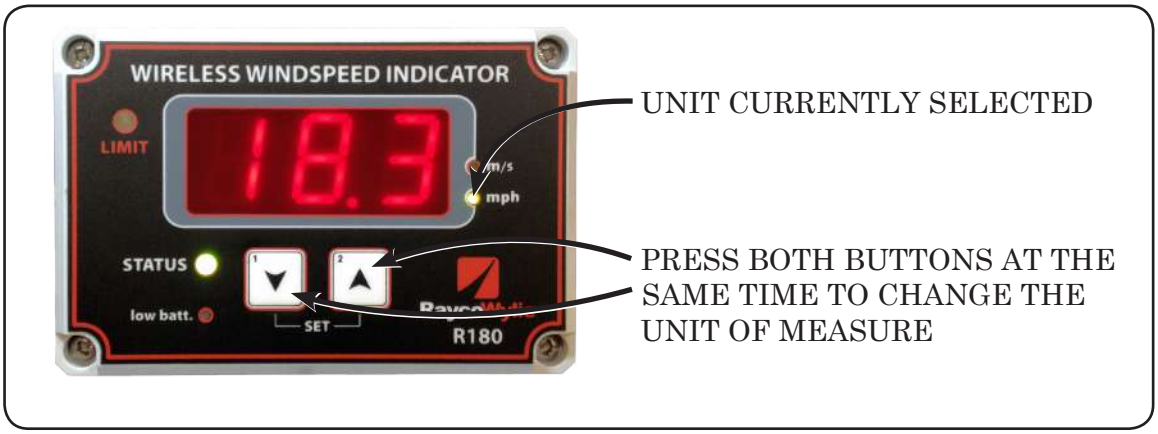

Fig 5: Change the measurement unit of the R180 display

2.3 Limit Setting

As soon the UP or DOWN button is pressed the display enter automatically in the limit setting mode. To change the limit use the UP or DOWN buttons repeatedly to increase or decrease the limit. Holding down the UP or DOWN buttons will increase the editing speed. When finished wait 5 seconds without pressing any buttons and the display will return to the normal mode by itself.

If the wind blows at a speed exceeding the speed limit, the “Limit” light will turn on and the internal buzzer will be heard.

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INSTALLATION AND SETUP

3.1 Display Mounting & Wiring

Determine the mounting location inside the cab in order to facilitate viewing by the operator. The display can be mounted on the dash or on a sidewall.
Use one of the three holes available at the top of the bracket and another one at the bottom of the bracket. Install the display using bolts ¼ (Bolts, Nuts, washer not included).

A power and alarm cable is provided with the R180 display. The power supply can be from 10-30 volt DC.

Pin #	Color	Description	Details
1	RED	Power	10-30 VDC
2	BLACK	Ground	Battery (-)
3	WHITE	Relay contact NC	Normally Closed Contact
4	BLUE	Relay contact COM	Common Contact

3.2 Wireless wind speed sensor installation

3.2.1 Installing and connecting the wind cup (Legacy version only)

It could happen that you receive your R180 System with the wind cup disassembled. To assemble the wind cup on the shaft execute the following assembly procedure:

1) Remove the cutter pin from the wind cups assembly.	2) Insert wind cups assembly in the shaft of the wind speed sensor and put the cutter pin back into place.
	

3) Connect the 2 wires into the two terminals of the wind cups assembly. There is no polarity, you can place the wire you want in the terminal of your choice.

4) Slide the rubber hood on the shaft to protect the terminals.

3.2.2 Battery paper tag removal

3.2.2.1 R180 legacy version

1. Unscrew the four Allen screws using HEX key 4 mm in order to remove the cover of the wind speed sensor.
2. Remove by hand the paper tag insulation.
3. Replace the cover and screws. Don't over-tighten

3.2.2.2 R180 current version

Simply Remove by hand the "Remove before use" paper tag insulation.

3.2.3 Installing the Wind Speed sensor

3.2.3.1 R180 legacy version

1. Remove the mounting bracket from the wind speed sensor by pulling out the hitch pin clip.

2. Determine the position of the mounting bracket. The mounting bracket must be installed on the same side of the boom as the cabin mounted display, perpendicular to the boom. The wind speed sensor must be installed at the highest point possible of the boom tip in a way that the wind cup is fully exposed to the wind and pivot freely on the mounting bracket at all boom angles.

Fig 6: Wind speed sensor typical mounting position.

3. Weld the mounting bracket to the boom at the selected position.

Fig 7: Mounting bracket.

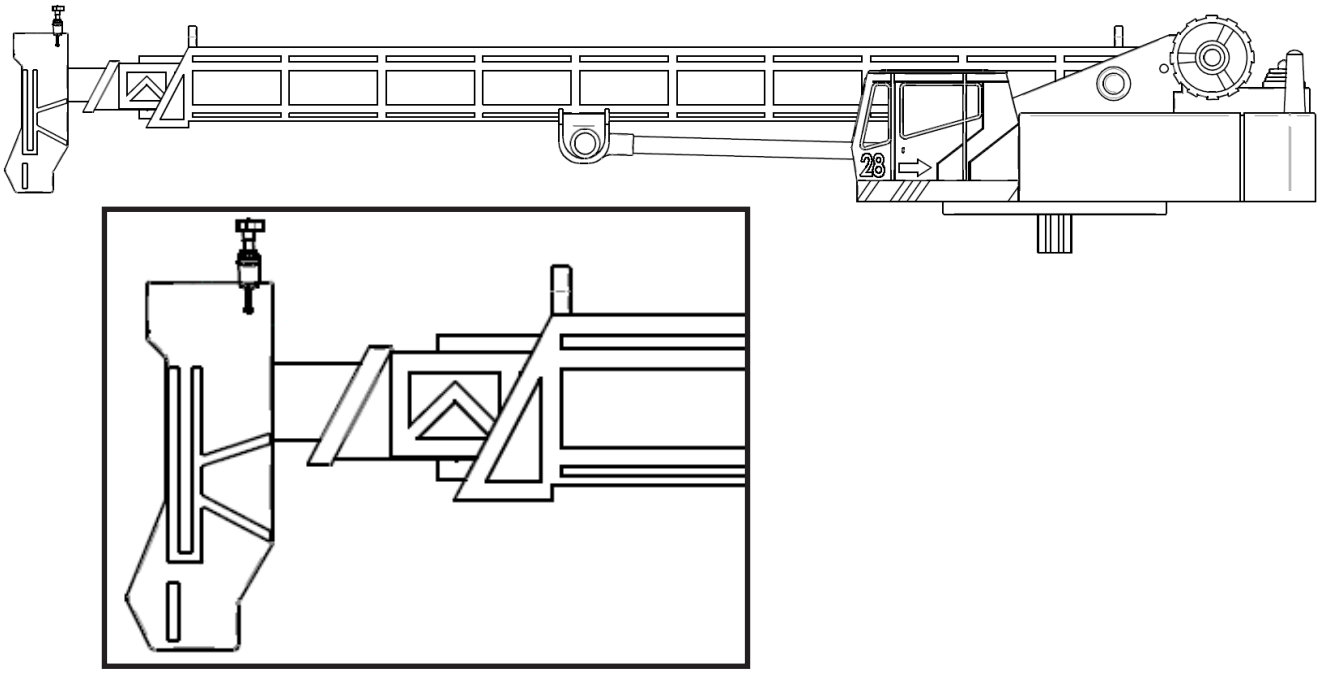
Do not weld in proximity of the wind speed sensor or the Display

4. Place the wind speed sensor on the mounting bracket, add washer and secure with the hitch pin clip.

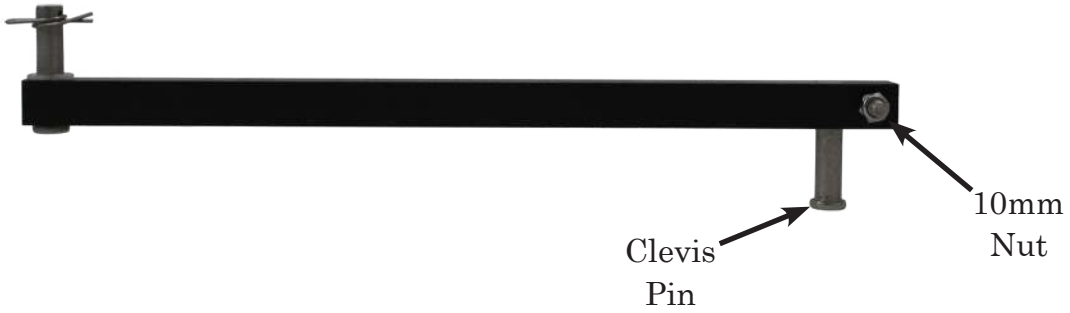
3.2.3.2 R180 legacy version

1. Remove the mounting bracket from the wind speed sensor by pulling out the hitch pin clip.

2. Determine the position of the mounting bracket. The mounting bracket must be installed on the same side of the boom as the cabin mounted display, perpendicular to the boom. The wind speed sensor must be installed at the highest point possible of the boom tip in a way that the anemometer is fully exposed to the wind and pivot freely on the mounting bracket at all boom angles.



3. Remove the clevis pin from the mounting bracket by unscrewing the 10mm nut.



3. Weld the clevis pin to the boom at the selected position.

Fig 8: Clevis Pin.

Do not weld in proximity of the wind speed sensor or the Display

4. Replace the mounting bracket on the welded clevis pin and tighten the 10mm nut to hold it in place.

5. Place the wind speed sensor on the mounting bracket and secure with the hitch pin clip.

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MAINTENANCE

4.1 Battery Replacement

Always use a RaycoWylie Systems supplied battery. These are long duration batteries of 3.6 volts that are not available in stores. See the cover of this manual to find telephone numbers for ordering. Order # 11HEX0032.

Fig 9: 3.6V Battery

4.1.1 R180 legacy version

1. Unscrew the four allen screws using HEX key 4 mm in order to remove the cover of the wind speed sensor.
2. Remove the battery by hand
3. Install the new battery, pay attention to insert the right polarity, positive end and negative end properly.
4. Replace the cover and screw in the HEX screws. Don't over-tighten

4.1.2 R180 current version

1. Unscrew the battery cover by turning it counter-clockwise.
2. Remove the battery by hand.
3. Install the new battery, pay attention to insert the right polarity positive end and negative end properly.
4. Replace the cover by turning it clockwise.

4.2 Programming the ID number

The ID number contains 4 digits, the first 2 digits are noted “High” by “H” and the last 2 digits are noted “Low” by “L”. Each digit of the ID number is coded in Hexadecimal (0-9, A-F).

Here’s how to change the ID number:

1. Find the serial number of the wind sensor. It is located on a label directly on the wind sensor.

2 digits “HIGH” part of the ID number

2 digits “LOW” part of the ID number

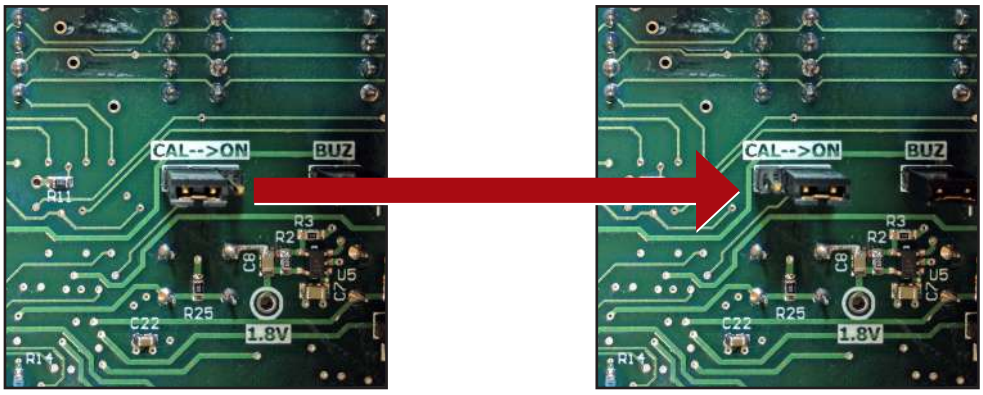
2 digits “HIGH” part of the ID number

2 digits “LOW” part of the ID number

2. The first two digits of the serial number are the “HIGH” part of the ID number and the two digits following are the “LOW” part of the ID number. Take note of these four digits.

3. Turn off the power supply of the R180 display. Using a Phillips screwdriver, open the display box of the R180.

4. Find on the printed circuit board inside the cover 3 metal pins with the word “CAL” and “ON” next to it. Move the jumper so that it covers the 2 pins of the “ON” side as pictured below.



Normal Mode Calibration Mode

5. Put the R180 cover back on and turn on the power supply.

6. First you need to edit the “HIGH” part of the ID number. Use the “DOWN” button to change the first digit and the “UP” button to change the second one.

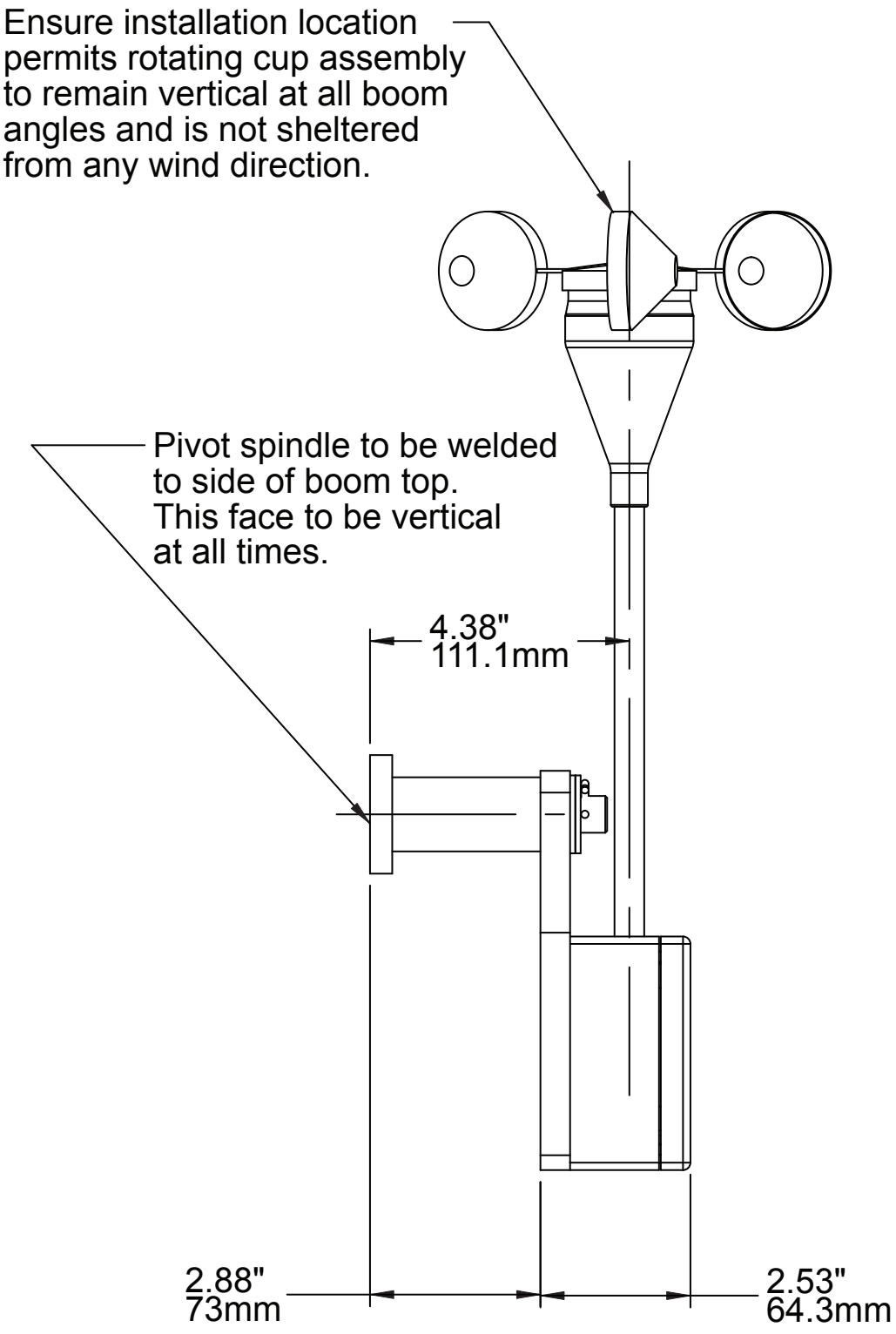
7. When you finish editing the “HIGH” part of the ID number, press both buttons at the same time to switch to the “LOW” part editing.

8. Make changes using the “UP” and “DOWN” buttons like you did with the “HIGH” part. Press both buttons again to switch back to the “HIGH” part editing to confirm your ID number.

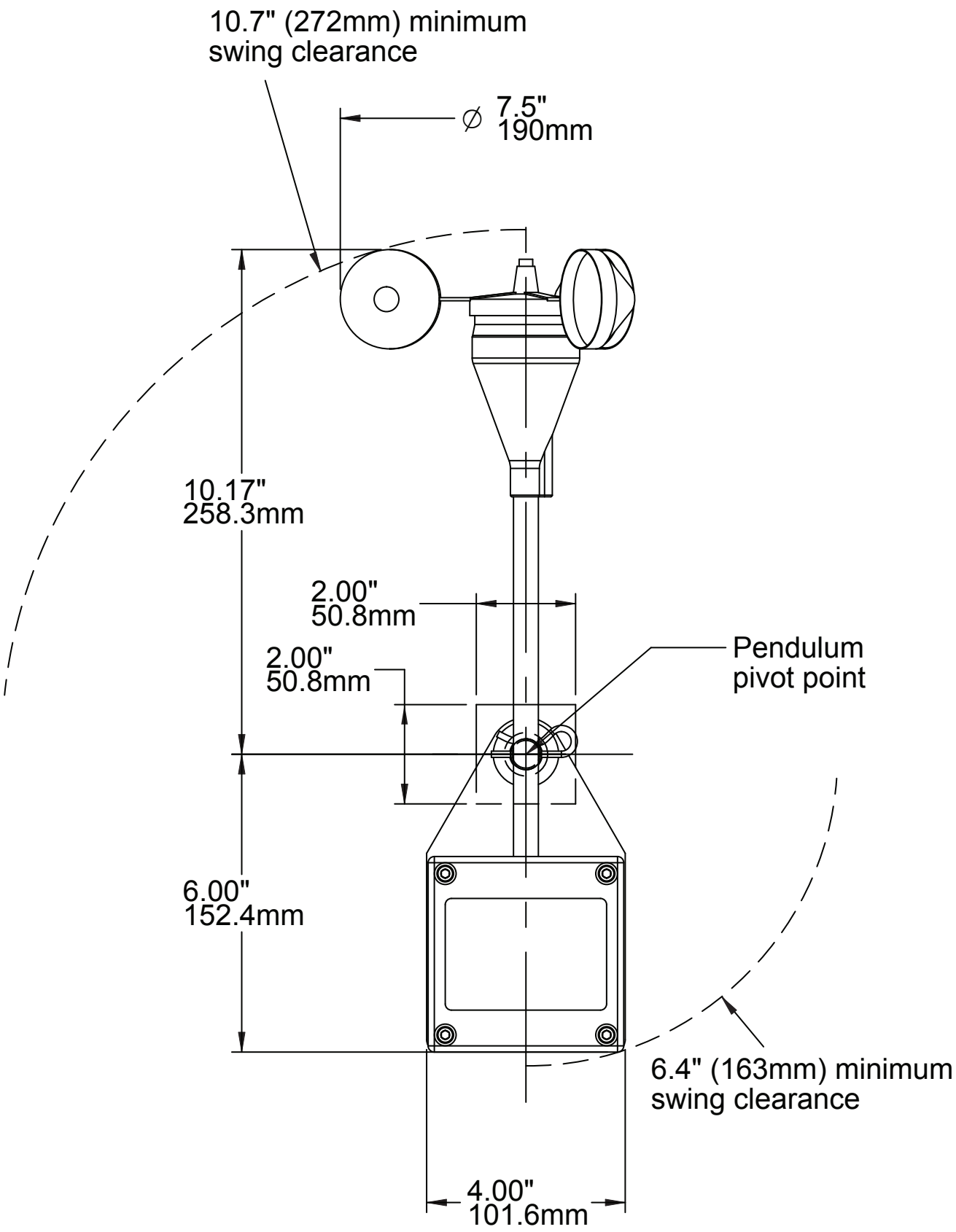
9. Put the jumper back at its normal position and switch off the power supply. It’s important to note that the jumper must be put back before to switch off the power. Put the R180 cover back on and switch on the power supply.

4.3 Technical Drawings

4.3.1 R180 legacy version



4.3.1 R180 legacy version (continued)



4.3.2 R180 current version