MeteoRain™ 200 Compact

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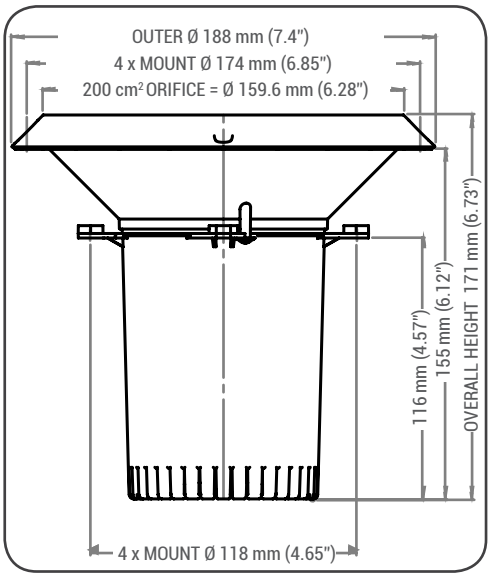
Ø 200 cm² self-balancing, self-emptying rain gauge

MeteoRain™ 200 Compact uses a self-balancing measuring principle. It offers high resistance to error producting effects as found in most rain gauges. These include soiling of the internal measuring mechanism over time, mechanical friction, residual water remaining affecting measuring spoon balance, debris entering the measuring mechanism, resistance to vibrations and non-level mounting.

Notable features include:

- Multiple mounting options
- Simplicity and reliability
- Easy to maintain and simple to clean with a removable funnel sieve/sift
- Robust and impact resistant funnel and housing
- Errors from non-level mounting are minimized with the self-balancing design
- Easy adjustment and recalibration of internal measuring mechanism
- Protection of measuring mechanism from contact during wire connections
- High-speed (0.13 s) self-emptying mechanism for high precipitation rate accuracy
- High-dynamic range up to 10 mm/minute (50 tips/minute) rain rates
- Bird-spikes and leaf fence are available
- Low-profile funnel for easy cleaning with a sharp edge for accuracy

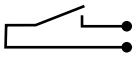


Self-balancing, self-emptying magnetic tipping bucket technology to ensure uninterrupted measurement of precipitation regardless of amount and intensity.

It measures rain by means of a standardized orifice funnel which collects water into the precision measuring mechanism. The mechanism offers more **consistent long-term response** than any other standard tipping-bucket rain gauge.

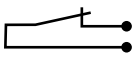
Individually tested

Rain gauges are individually tested and use high quality sealed reed switches. Electronics are protected against salt spray, water, frost and heat by a weather-resistant coating.



Default

NO - Normaly Open reed switch in series with a 470 Ω resistor



Special Order

NC - Normaly Closed reed switch in series with a 470 Ω resistor

Pluviometer type	Accuracy	Stability	Resolution	Measuring range	Operating range	Starting threshold *	Rain orifice area
Precipitation type: Liquid (Rain)	< ±1% for rain rates <100mm/hr	< 0.0125 mm per year	0.2 mm	Up to 600 mm/hr in above freezing conditions	-40 °C...80 °C	0.25 mm *	200 cm² (Ø 16.0 cm, 6.3")

* Rain gauge starting value is the amount of percipitation required to register a first reading. All funnel based rain gauges trap a small mount of percipitation on the funnel surface before rain water reaches the measuring mechanism. This includes drops remaining on funnel surface (funnel wetting), evaporation from the funnel surface, wetting of debris, dirt, and dust in the funnel catch sieve/sift and water opening. Rain gauge inspection interval should be determined by user experience and the environment.

Electrical Interface	Electrical switching speed	Switching resistance & capacity	Max current	Max voltage	Surge protection	Tipping bucket speed	Shock resistance
Magnetic reed switch	0.25 ms	200 - 250 mOhm & 1 pF @ 10 kHz	30 mA	26 VDC	Transient protection	0.13 seconds	15 g

For agricultural and IoT use where consistent measurement and long-term reliable maintenance-free operation are important

Weather resistant, robust and simple to maintain with reliable ultra-low power reed switch operation. ISO:9001 quality

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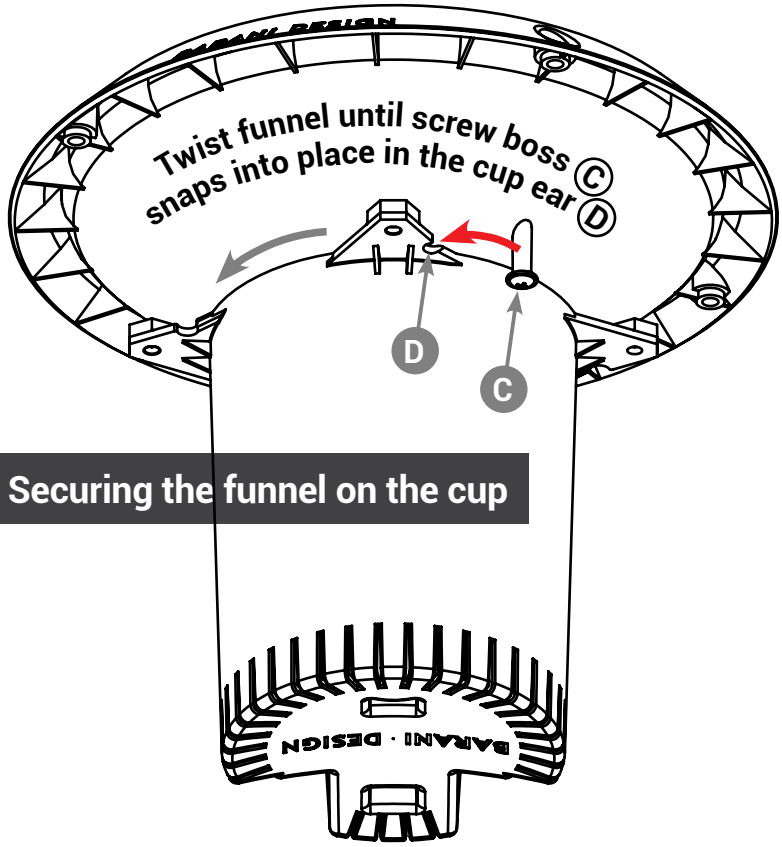
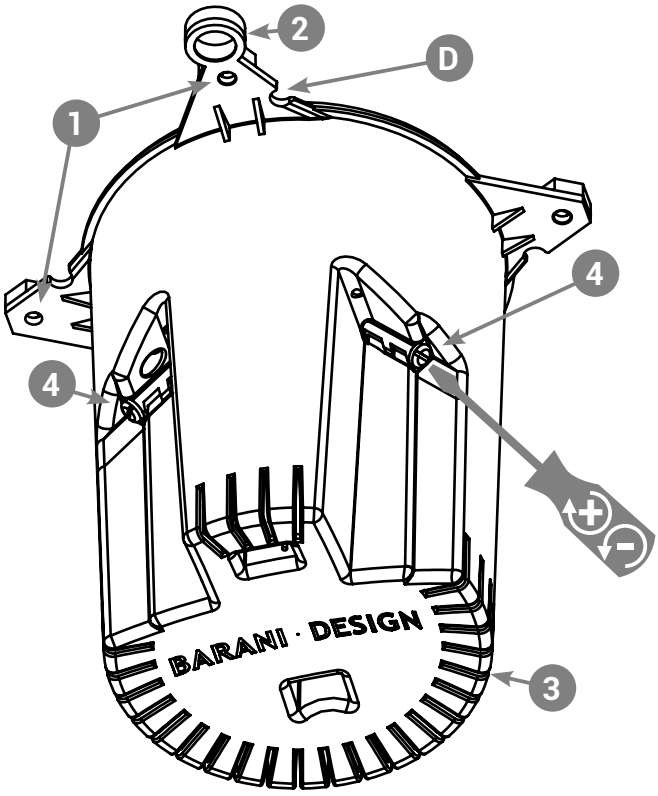
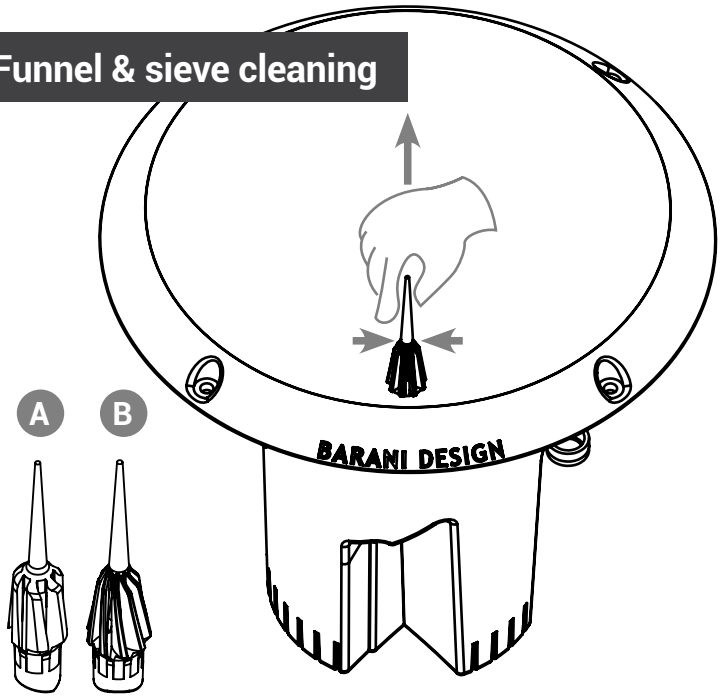


Securing the funnel on the cup



1. **Cup leveling & mounting screw holes**
2. **Spirit level holder for rain gauge leveling**
3. **Drain slots all around the perimeter**
4. **Calibration adjustment screws for the self-balancing tipping bucket mechanism**

Funnel & sieve cleaning



A **Coarse sieve/sift**

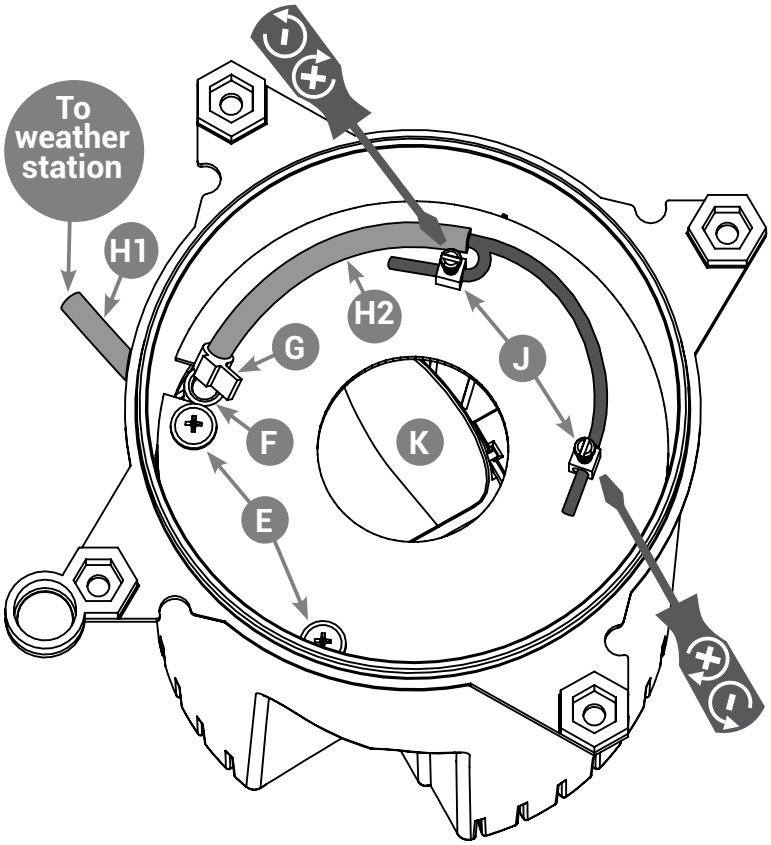
B **Fine sieve/sift**

1. Remove the funnel by twisting out of the snaps on the cup ears.
2. Remove the spiked sieve by gently pinching and pulling up.
3. Whipe the funnel with a moist cloth and clean the sieve.
4. Reinstall the funnel by twisting into the snaps on the cup ears.
5. Insert the sieve by pushing down until it snaps into place.

Calibration procedure

1. Make sure the rain gauge is sitting level before beginning this proceedure.
2. Obtain a 4 ml or 5 ml syringe so that you can easily adjust the dose into each bucket, and dose single drops.
3. Practice filling the buckets from the electronics PCB board height so that you are able to dose exactly 4 ml.
4. Close to the tipping point of the bucket slow down and drop one drop at a time until it tips to the other side.
5. Adjust the calibration adjustment screws with a screwdriver so that each side of the tipping bucket mechanism tips with exactly 4 ml of water. Turning the adjustment screw clockwise = (+) tips with more water.
6. You should easily be able to achieve repeatability of ±1 drop.

Due to this rain gauge's self-balancing measuring tipping bucket design, it is able to consistenly achieve a ±1 drop bucket tipping point. It is also much less sensitive to not sitting level than other rain gauges, which is one of the major causes of error in precipitation measurement.



E PCB screws secure the electronic board

F Wire opening for max Ø 4 mm (5/32") wire

G Cable-tie to secure cable and protect the screw terminals from pulling force

H Electrical cable with 2 electrical leads Stranded cable is recommended

J Screw terminals for connecting wire leads

K Measuring mechanism below the board

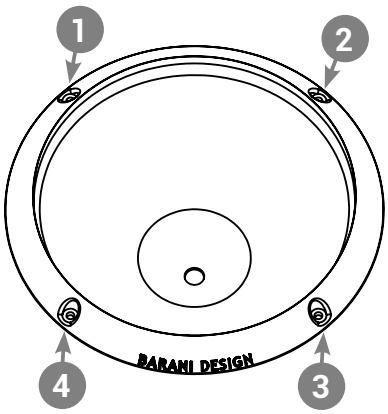
Mounting options

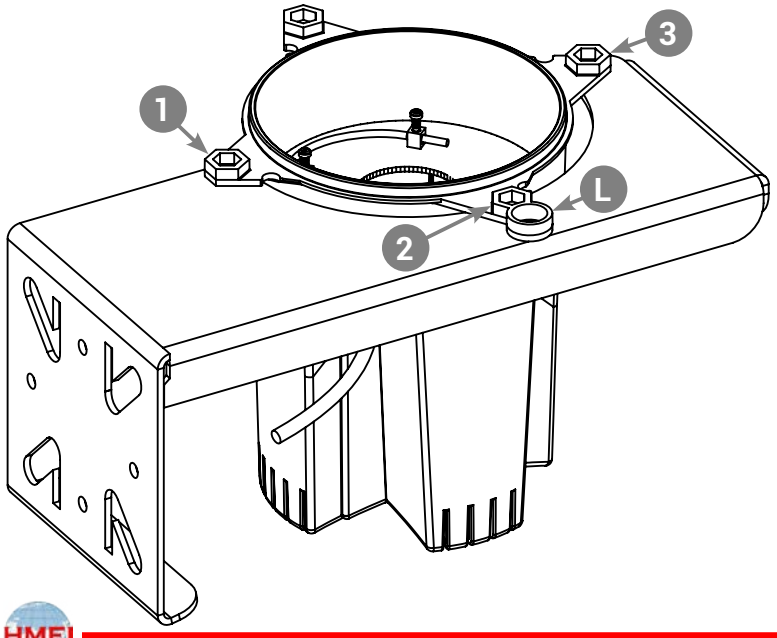
Rain gauge can either be mounted on the 4 funnel or on the 4 cup mounting points.

We recommend using only 3 of the 4 mounting points so that leveling can be performed easily since the mounting points are 90° appart.

Shown bellow are two available stainless steel mounts for the rain gauge.

Bubble (L) points to the spirit level holder for rain gauge leveling.





Wiring the rain gauge to a rain counter or a weather station

1. Slide your rain counter or weather station connection cable in the direction from (H1 -> H2) into the the hole (F) of the rain gauge cup. Maximum wire diameter is 4 mm (5/32").
2. Slide a small cable-tie / zip-tie (G) over the cable, but do not tighten in just yet.
3. Unblank/strip off the outer wire insulation so that it matches the picture, while leaving the insulation on the individual wire leads.
4. Loosen (unscrew couterclockwise) the wire terminal screws so that the wire hole in each wire terminal is unobstructed.
5. Unblank/strip off only the last 1cm (3/8") of the insulation on the individual wire leads and slide them into the openings of the screw terminals (J).
6. Tighten (clockwise) the wire terminal (J) screws so that the wire in each hole is secured.
7. Check the electrical connection by reassembling the funnel and pouring in a small amount of water to activate the measuring mechanism. If rain readings are recorded, you are finished.
8. If the raingauge is installed on a tall pole or where vibrations are expected, drip a drop of superglue on each wire terminal to prevent the wire connection screws from loosening over time.