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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 producing effects as found in most rain gauges. These include soiling of the internal measuring mechanism, mechanical friction, residual water remaining in the measuring spoon from previous rain event, and debris. Additionally, MeteoRain® offers high resistance to vibrations and non-level mounting.

Notable features include:

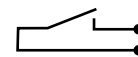
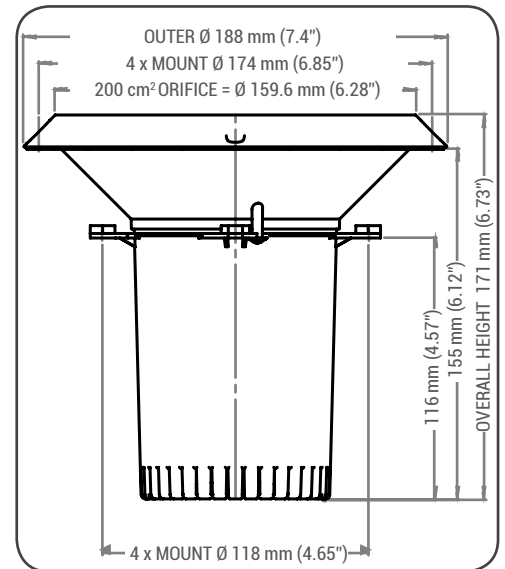
- Simplicity and reliability
- Multiple mounting options
- Easy to maintain and simple to clean with a removable funnel sieve/sift
- Robust and impact resistant funnel and housing
- Errors from non-level mounting are minimized with the self-balancing design
- Easy adjustment and recalibration of internal 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 are available. Leaf fence is not required due to self-cleaning funnel.
- 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.

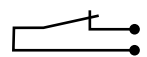
Individually tested

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 - Normally Open
reed switch in series
with a 470 Ω resistor



Special Order

NC - Normally 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	0.1, 0.2, 0.25 mm (0.01")	Up to 600 mm/hr in above freezing conditions	-40 °C...80 °C	Resolution + 0.07 mm (0.0027") *	200 cm ² (Ø 16.0 cm, 6.3")

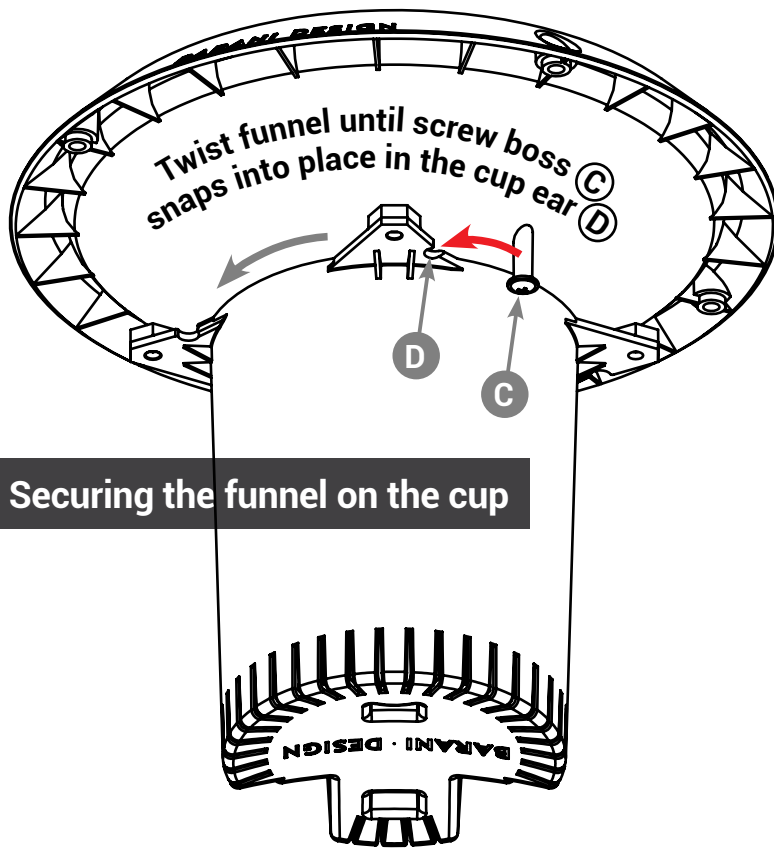
* Rain gauge starting value is the amount of precipitation required to register a first reading. All funnel based rain gauges trap a small amount of precipitation on the funnel surface, which includes drops remaining on funnel surface (~1.4 ml), evaporation from the funnel surface, wetting of debris, dirt, and dust in the funnel catch sieve/sift and water opening (together an additional 1 ml). Rain gauge inspection interval should be determined by user experience and the environmental conditions.

Electrical Interface	Electrical switching speed	Switching resistance	Max current	Max voltage	Surge protection	Tipping bucket speed	Shock resistance
Magnetic reed switch	0.25 ms	470 Ω	10 mA	15 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

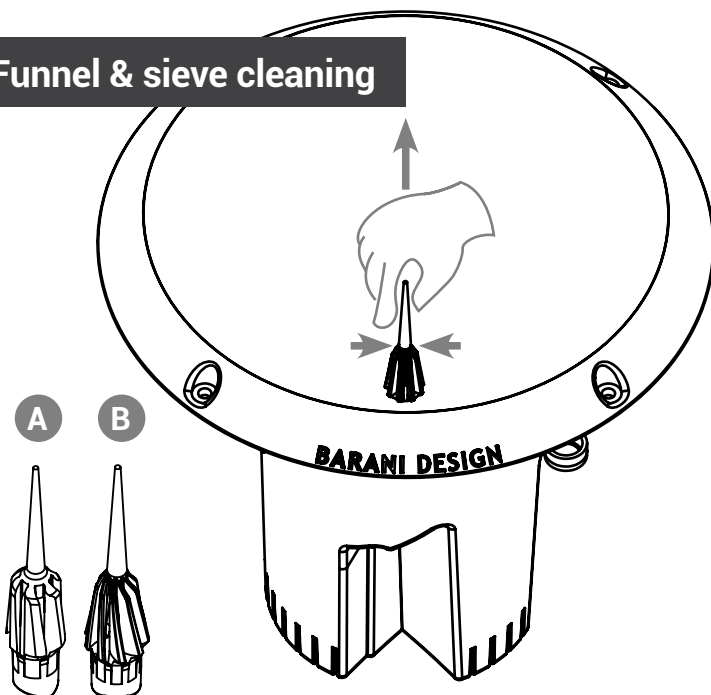


Weather resistant, robust and simple to maintain with reliable ultra-low power reed switch operation. ISO:9001 quality



Securing the funnel on the cup

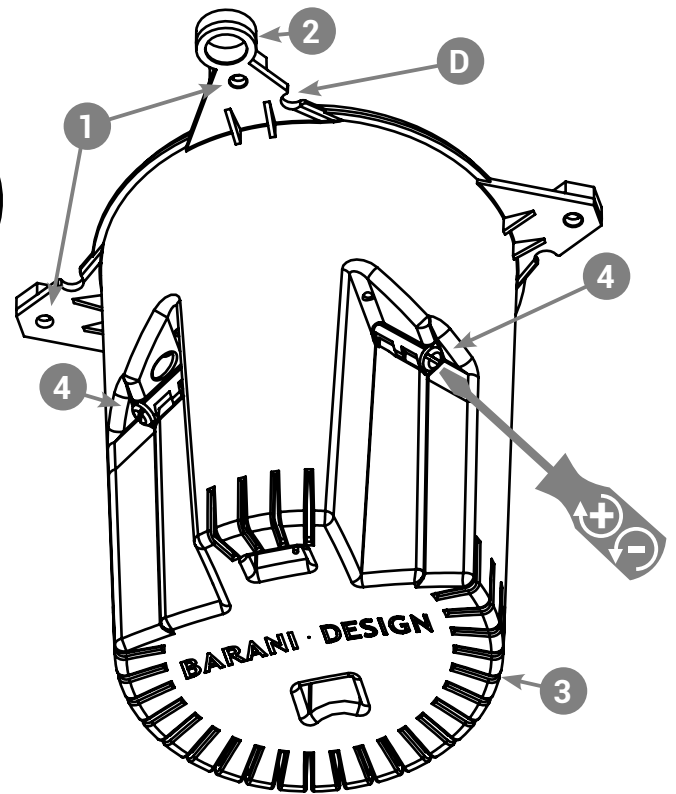
Funnel & sieve cleaning



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. Wipe 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.

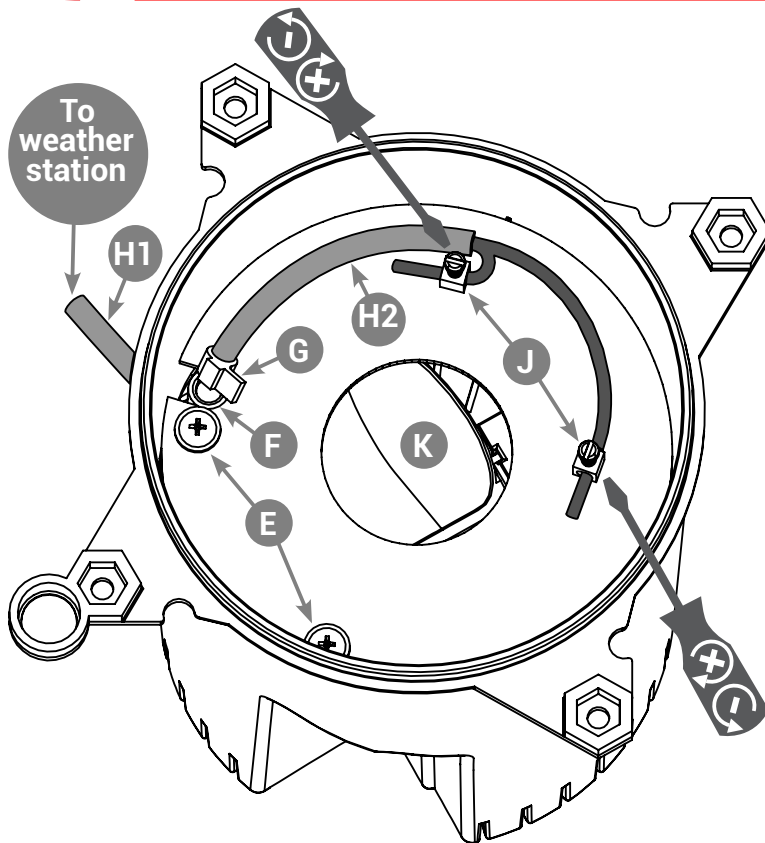


- 1 Cup leveling & mounting screw holes
- 2 Spirit level holder for rain gauge leveling
- 3 Drain slots all around the perimeter
- 4 Calibration adjustment screws for the self-balancing tipping bucket mechanism

Calibration procedure

1. Make sure the rain gauge is sitting level before beginning this procedure.
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 consistently 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

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 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 counterclockwise) the wire terminal screws so that the wire hole in each wire terminal is unobstructed.
5. Unblank/strip off only the last 1 cm (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 rain gauge 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.

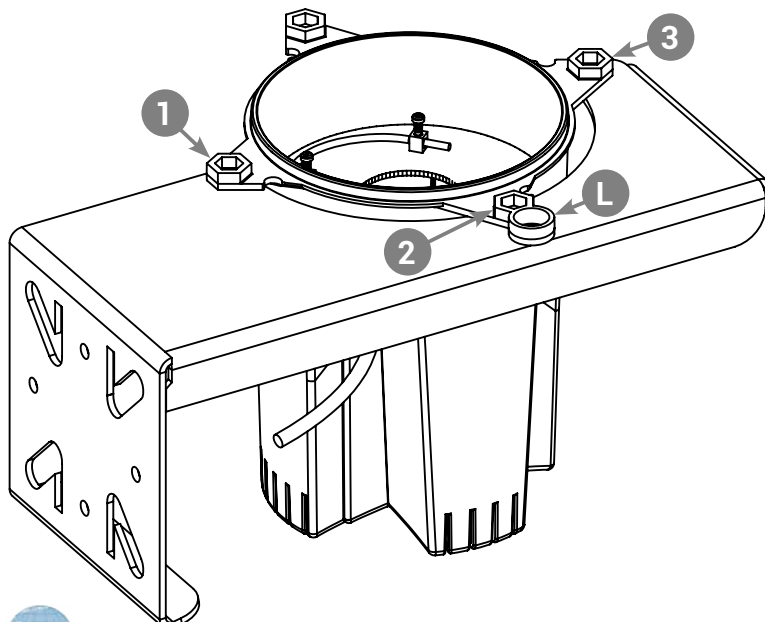
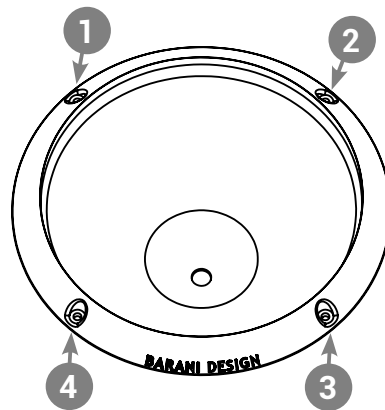
Rain gauge mounting options

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° apart.

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

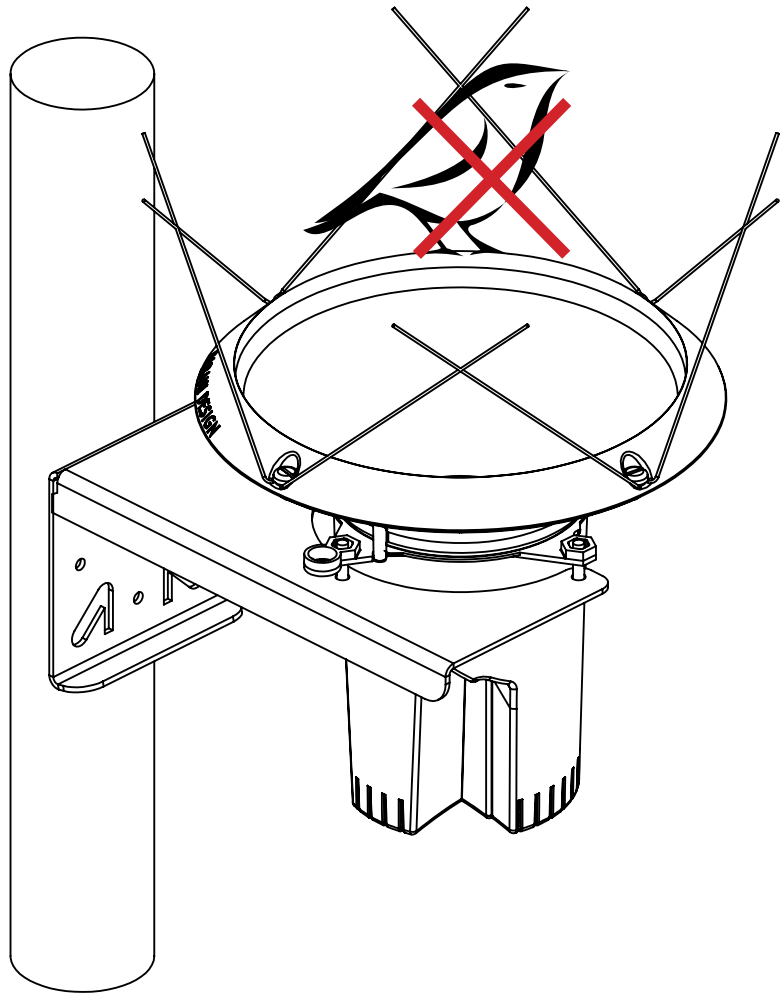
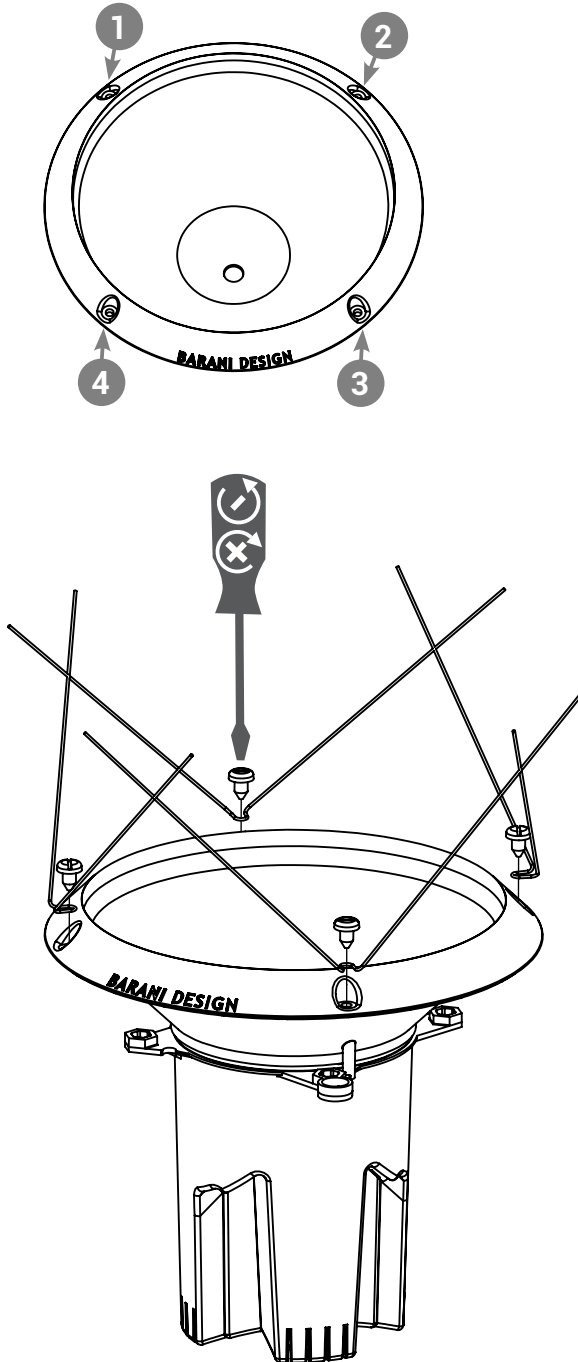
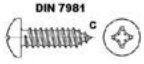
Bubble **L** points to the spirit level holder for rain gauge leveling.





Bird spike mounting options

Stainless steel bird spikes can be mounted on the four funnel mounting points using the supplied flat head machine screws DIN 7981 Ø4.8 mm (3/16") or similar. The mounting holes are Ø4 mm (5/32") in diameter.



Leaf fence mounting options

Although we offer an optional leaf fence, we do not recommend a leaf fence for the MeteoRain® 200 Compact rain gauge or the wireless MeteoRain IoT Compact, since its funnel design allows the wind to remove most larger debris from the funnel naturally. Due to the accuracy of the MeteoRain® measuring mechanism, a wire mesh leaf fence tends to trap water drops on it, thus negating much of its benefit.

