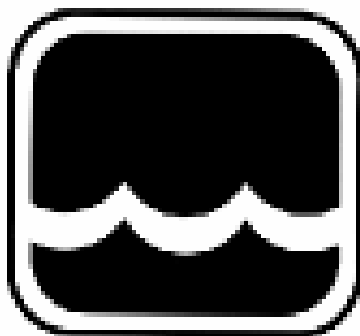




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Stormwater Sampler: SS201

5/23/02



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Congratulations on your purchase of the Global Water SS201 Stormwater Sampler. This instrument has been quality tested and approved for providing accurate and reliable measurements. We are confident that you will find the SS201 to be a valuable asset for your application. Should you require assistance, our technical staff will be happy to help.

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I. SS201 Checklist

- a. Stormwater Sampler
- b. 12V Battery (Inside Enclosure)
- c. Battery Charger
- d. SS201 Manual
- e. RG333 Auto-Drain Rain Gauge
- f. RG333 Manual

II. Inspection

- a. Your SS201 unit was carefully inspected and certified by our Quality Assurance Team before shipping. If any damage has occurred during shipping, please notify Global Water Instrumentation, Inc. and file a claim with the carrier involved.

Use the checklist to ensure that you have received everything needed to operate the SS201.



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III. Description

- a. The Global Stormwater Sampler, SS201, is designed specifically to meet the sampling requirements of the Stormwater program. The Global Sampler takes a "first flush" sample in one bottle and a "time weighted" composite sample in the second bottle, to meet the guidelines. It is actually two samplers in one: it consists of two intake tubes, two sampling pumps and two bottles, which eliminates any possibility of cross contamination between the first flush and the composite sample. The Global Stormwater Sampler is easily set up and installed in any stormwater channel to take and store physical water samples throughout the storm event.
- b. The Global Stormwater Sampler consists of a rugged, rainproof lockable carrying enclosure. Inside the enclosure are two 4000 ml sample bottles for first flush and composite samples, two peristaltic sampling pumps, a control panel, a water sensor, a rain sensor, and a rechargeable battery. A rain gauge and a battery charger are also provided.

IV. Installing the Stormwater Sampler

SAMPLING LOCATION

- a. To meet specific permitting requirements, sampling locations may need to be established and certified by a licensed Professional refer to your permitting requirements prior to establishing a sampling program. An appropriate sampling location will most likely be:
 - Close to a storm water discharge channel or stream
 - Situated so the rain gauge is away from trees and buildings
 - Removed from public areas

SAMPLING UNIT

- b. The sampler should be placed upright (it will not work if placed on its back or side) within 15 feet of the rain sensor (see installation instructions below).
- c. Open the sampler and remove the battery charger from the unit. . Store the charger for later use.



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- d. To secure the sample bottles:
 - 1) Screw the bottle caps/float switches onto the sample bottles
 - 2) Place bottles into the sampler enclosure
 - 3) Insert end of peristaltic pump hose into the hole in each bottle cap
 - 4) Plug the float switch leads into the control panel. Each pump has a jack associated with it. The bottle switch needs to be plugged into the jack associated with its respective pump. (Located under control panel enclosure).
- e. The sampling unit can be secured from vandalism and strong winds by one of the following methods:
 - Mount unit on post and lock closed
 - Lock closed and chain handles to a solid structure (such as a tree, post, or building)
 - Enclose and lock unit in a steel electrical box
- f. Avoid drilling holes in the enclosure if possible. If holes must be drilled in the enclosure avoid drilling through the control panel enclosure. Any holes drilled through the enclosure must be sealed with some type of silicone glue to prevent water from entering the case and causing an equipment failure.
- g. The unit is water resistant, not water proof. The unit must be located well above the expected water level to continue to provide reliable service.

V. Installing the Rain Gauge

- a. Please refer to the RG333 Auto-drain Rain Gauge for instructions.



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VI. Installing the Rain Sensor

- a. The rain sensor can be set up to trigger a sample in one of two ways. Either based on rainfall inside the rain gauge or based on a rise in water level in a storm drain. To trigger the sampler based on water level skip to the section on installing the pickup hose.
- b. The rain sensor is used to trigger a sample for specific amounts of rainfall accumulation. Based on your application's requirements, insert the tip of the rain sensor into the rain gauge at a specified rainfall accumulation (0.1 to 0.6, 1.0, or 2.0 inches). Securely hook the rain sensor's cable into the groove in the cylinder and place a tie wrap (provided on the cable) outside the groove to secure the installation. Insert the rain sensor's plug into the "Sensor" socket on the control panel.

VII. Installing the Pickup Hose

- a. The pickup hose should be installed in a storm water discharge channel or stream that is appropriate for your sampling program. The pickup hose can be installed in the following manner:



Securely insert a piece of mounting material into the center of the channel.

- 1) Securely insert a piece of rebar or similar mounting material into the center of the storm water discharge channel or stream. The material should extend from the bottom of the channel at a distance appropriate for the pickup hose installation.



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Dry Channel

- b. In a dry channel, fasten the rain sensor and the end of the pickup hose onto the mounting material using tie wraps, electrical tape, or hose clamps. Ideally, the pickup strainer should be placed at $\frac{1}{2}$ the depth of flow during a storm event. The rain sensor should be tied just above the debris strainer, in order to trigger a sample after the sample intake is submerged. The rain sensor and pickup hose should be situated to avoid contact with the channel bottom.



In a dry channel, the rain sensor should be tied just above the debris strainer.

Stream

- c. In a stream, fasten the end of the pickup hose onto the mounting material using tie wraps or hose clamps. The pickup strainer should be submerged under water and should be situated to avoid contact with the channel bottom.



In a stream, the pickup strainer should be submerged under water.



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VIII. Using the Stormwater Sampler

- a. Verify that the sampling unit, rain gauge, rain sensors, and sampling pickup hose are installed correctly (see previous sections). The Global Water SS201 Stormwater Sampler will function only if the battery plug is securely fastened into the battery socket on the control panel, the float sensor plugs are inserted into their sockets, and the rain sensor is plugged into its socket.
- b. Set the composite sample Interval and Size knobs to the approximate values desired. For a precise sample size see appendix A.
- c. Verify the rain sensor contacts are dry. Turn the sampling unit ON (switch is on the control panel) and verify that the sampler is operating. Press the momentary switches to test each of the pumps. The momentary switches can also be used to take manual samples. If the pump turns slowly, the battery voltage should be checked and recharged if necessary, see the Maintenance section. If the momentary switches do not cause the pump to run, verify that each bottle switch is connected to the control panel and that the battery is charged. If the unit still does not sample, refer to the Trouble Shooting section. The unit must be ON to take automatic samples.
- d. Verify the automatic sampling works by placing the rain sensor in about an inch of ionized water. NOTE: The sampler will not take a sample if the water is deionized. If this is an issue, a small amount of salt or dirt placed inside the rain gauge will cause the rain sensor to trigger the sampler correctly.
- e. The sampler takes two types of samples. The first flush/discrete sample bottle will be filled during the first event that triggers the sampler. The composite sample bottle fills according to the sample specifications set by the user. It will continue to sample as long as the rain sensor is immersed in water and the float switch has not been activated. The float switch in the bottle cap will turn the pump off before the sample bottle overflows. After a storm, remove the sample bottle or transfer the sample to a small bottle for lab or turbidity meter analysis. Then, install an empty, clean bottle.



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IX. Using the Rain Gauge

- a. Please read the RG333 Rain Gauge Manual for rain gauge instructions.

Daily Log

- b. Whenever possible, take rainfall readings at the same time each day. Record the readings on the daily log, appendix B. Use the date on which the readings are taken even though much or all of the rain may have fallen the preceding day, after the daily reading was taken for the previous day. Enter the reading in hundredths of an inch (.01, .31, 1.01, 3.01). If the rainfall is less than 0.1 enter "T" for trace in the daily precipitation log.

X. Specifications

Sample Size:	First Flush: 4000 ml Composite: Set by user (4000 ml composite sample maximum)
Operating Temperature:	0° to +70°C
Size of unit:	9"L X 17"W X 22"H
Weight:	22lb (Shipping Weight 24lb)
Materials:	
Enclosure:	Expanded UV protected PVC
Bottles:	4000 ml Polyethylene
Sample Tubing:	15' nylon reinforced 1/4" ID polyethylene flexible tubing sections with intake strainers
Sample Pumps:	
Flow Rate:	1000 ml per minute at 4 ft. head
Type:	Peristaltic
Maximum Lift:	22'
Water Level Sensor:	Solid State with a 15' cable.
Battery:	Rechargeable 5 AH Gel Cell
Battery Life:	The battery will power the sampler for a minimum of four months including five 24-hr. storm events before recharging is required.



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XI. Maintenance Sampler

- a. The Global Water SS201 Stormwater Sampler requires minimal maintenance. The sampler enclosure is rainproof and rugged. Avoid exposure to extremely rough usage. Routinely wipe the carrying case and control panel face, rinse the pickup hose and debris strainer, and wash the sample bottle with mild soap and warm water. Additional plastic and glass sample bottles, norprene tubing for the sampler pump, bottle caps/float switches, removable debris strainers, sensors, and pickup hose can be purchased from Global Water (see Appendix C section).

Rain Gauge

- b. Please see the RG333 Auto-Drain Rain Gauge manual for more information.

Battery

- c. The battery will last without requiring recharging through several storm events. If the pump grinds slowly, this is an indication that the battery requires recharging. We recommend fully recharging batteries approximately once per month. In addition, the battery should be recharged before any extended use. NOTE: The battery life will last longer if recharged before it drains below 10.5 volts.
- d. To recharge the battery, unfasten it from the control panel, slide it out of the carrying case, and unhook the cord from the battery terminals. Then, fasten the battery charger's disconnects onto the battery terminals and plug the charger into a wall socket. Full recharge will take about 12 hours. Additional batteries and battery chargers are available from Global Water (see Appendix C section).



To recharge the battery, fasten the charger's disconnects onto the battery terminals and plug the charger into a wall socket.



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XII. Trouble Shooting

Issue: Pumps run all the time

- a. Verify the rain sensor probes are not shorted together. Clean the probes with a wire brush. Unplug the rain sensor. The pumps should both stop.
- b. Verify the float switches are working correctly. Lift the float off the end of the switch. The pump should stop. Test both pumps.

Issue: One of the pumps does not work

- c. Swap float switches. If the other pump stops working the float switch is bad and needs to be replaced.

Other issues

- d. Call us for tech support: 800-876-1172 or 916-638-3429 (many problems can be solved over the phone). Fax: 916-638-3270 or Email: globalw@globalw.com.

Be prepared to describe the problem you are experiencing including specific details of the application and installation and any additional pertinent information.

- e. In the event that the equipment needs to be returned to the factory for any reason, please call to obtain an RMA# (Return Material Authorization). Do not return items without an RMA# on the outside of the package.

Include a written statement describing the problems.

Send the package with shipping prepaid to our factory address. Insure your shipment, as the warranty does not cover damage incurred during transit.

- f. When calling for tech support, please have the following information ready;

1. Model #.
2. Unit serial number.



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3. P.O.# the equipment was purchased on.
4. Our sales number or the invoice number.
5. Repair instructions and/or specific problems relating to the product.



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XIII. Warranty

- a. Global Water Instrumentation, Inc. warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from date of shipment from factory. Global Water's obligations under this warranty are limited to, at Global Water's option: (I) replacing or (II) repairing; any products determined to be defective. In no case shall Global Water's liability exceed the products original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by Global Water Instrumentation, Inc., or which has been subject to misuse, negligence or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.
- b. The warranty begins on the date of your invoice.



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XIV. Appendix A: Automatic Sampler Calibration

- a. The composite sample size is approximate. This means that the sample size may vary with distance from the sampler. If precise sample sizes are needed it will be necessary to manually calibrate to the installation.
- b. To manually calibrate, you will need a graduated cylinder that exceeds your intended sample size.
- c. Follow these steps to calibrate:
 1. Install the sampler in its intended location.
 2. Remove the sample bottle.
 3. Adjust the sample size to roughly the size you intend to take.
 4. Place the graduated cylinder under the output of the pump.
 5. Turn on the sampler, press and hold and press the red pushbutton.
 6. When the sampler is finished pumping, check the amount sampled in the graduated cylinder.
 7. If the sample size is incorrect:
Empty the cylinder and slightly adjust the sample size clockwise for a larger sample and counter-clockwise for a smaller sample. Then repeat steps 4 through 6.
 8. If the sample size is correct:
Empty the cylinder and replace the sample bottle. Be sure to re-connect the lead from the bottle cap into its socket, and make sure the output of the pump is going into the bottle.

These steps will need to be repeated for every individual installation.



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XV. Appendix B: Daily Rainfall Log Sheet

1. Try to record precipitation each day
2. Record precipitation to the nearest 1/100th of an inch (.01,.31,1.31,etc.)
3. If precipitation is less than .01, record "T" for trace.
4. Use the remarks column to list any unusual weather.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Remarks
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													
Total													



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XVI. Appendix C: Accessories

<u>Part Description</u>	<u>Part Number</u>	<u>Unit</u>
12V 5Ah Battery	00-010	Each
Battery Charger	FE0400	Each
1 Gal Plastic Sample Bottle	00-418	Each
Bottle Cap/Float Switch	CB0200	Each
Rain Gauge	CA0800	Each
Pickup Hose	00-546	Feet
Pickup Strainer	CA0300	Each
Pump tubing	00-744	Feet
Rain Sensor	CB0400	Each