



Depth Sensor Node Streambed Installation Procedure

Follow these steps to install a depth sensor node in a stream bed.

Written By: Brooke Mason



 **TOOLS:**

- [3/8" Wrench](#) (1)
- [Bosch Impact Driver](#) (1)
- [Post Pounder](#) (1)
- [3/8" Socket adapter](#) (1)
- [3/4" Socket](#) (1)
- [Tape Measure](#) (1)

 **PARTS:**

- [5 ft steel strut channel](#) (1)
- [5ft aluminum strut channel](#) (1)
- [strut channel connector](#) (1)
- [u-shape strut channel bracket](#) (2)
- [316 Stainless Steel Hex Head Screw](#) (8)
1/2"-13 Thread Size, 1" Long
- [316 Stainless Steel Washer](#) (8)
for 1/2" Screw Size, 0.531" ID, 1.25" OD
- [Strut Channel Nut](#) (8)
with Spring, 1-5/8" High Channel, Steel,
1/4"-20 Thread
- [Open-Storm Depth Sensor Node](#) (1)
- [18-8 Stainless Steel Serrated-Flange Hex Head Screw](#) (4)
1/4"-20 Thread Size, 3/4" Long
- [Strut Channel Nut 316 Stainless Steel](#) 1
4"-20 Thread Size (4)
- [18-8 Stainless Steel Washer for 5/16"](#)
Screw Size, 0.344" ID, 0.75" OD (4)

Step 1 — Preparing and setting first strut channel



- Clear large rocks from the streambed to make it easier to install the strut channel.
- ⓘ Place cleared rocks downstream so they do not damage the node during a storm.
- Set 5 ft steel strut channel into place.
- ⓘ Ensure the open side of the strut channel faces south so that the solar panel receives maximum sunlight! Additionally, be careful not to deform the steel strut channel too much. A bit of deformation is okay.
- Use the post pounder to drive the strut channel 3 ft into the stream bed.

Step 2 — Attaching strut channel connector



- Place two spring strut channel nuts into the strut channel and then place the strut channel connector.
- ⓘ Two of the strut channel connector holes should be above the strut channel for connecting the top strut channel.
- Insert two washers and screws into the nuts.

Step 3 — Attaching additional strut channel



- This is what the attached strut channel connector looks like from above.
- Place two additional spring strut channel nuts into the aluminum strut channel to be attached.
- Insert the last two washers and screws into the nuts.
- Use an impact driver to secure the screws into place. The impact driver should have a 3/4 " Socket connected via a socket adapter.

[Socket Adapter](#)

- This is what the extended strut channel looks like.

Step 4 — Attaching the strut channel arm



- Line up a 1 ft strut channel with a u-bracket to the vertical strut channel.
- Put two spring strut channel nuts into the vertical strut channel. Insert two washers and screws into the u-bracket to hold the strut channel arm.
- Use the impact driver to tighten the screws.
- This is a what the final node holding structure looks like.

Step 5 — Attaching the node



- Place two screws into the node enclosure with the 5/16" washer and strut channel nuts on the backside.
- ⓘ You can remove the strut channel nut spring to make installation easier.
- Slide the node into the strut channel arm.
- ⓘ The washer should be on the outside of the strut channel and the strut channel nut should be on the inside.
- Tighten the screws with a 3/8 inch wrench.

Step 6 — Attaching the lock



- Create a 4 number lock combination.
- ⓘ Projects have set lock combinations. Ask the lab for guidance.

Step 7 — Measuring starting depth



- Using a tape measure, measure the length from the bottom of the ultrasonic depth sensor to the water surface.
- Measure the length from the bottom of the ultrasonic depth sensor to the bottom of the stream bed.

Step 8 — Trim foliage that may block solar panel



- If foliage may block the solar panel from charging, trim some branches.
- This is a completely installed stream bed depth sensor node!

Step 9 — Attaching additional strut channel arm



- ⚠ Sometimes two strut channel arms are preferred over one.
- Attach a second 1 ft strut channel arm using the same hardware as the first strut channel arm.
- ⓘ Use the node enclosure to determine how far apart the two arms need to be.
- Tighten the screws with the impact drill.

Step 10 — Attaching node to two arms



- Place four screws into the node enclosure with the washer and strut channel nuts on the backside.
- ⓘ You can remove the strut channel nut spring to make installation easier.
- Slide the node into the strut channel arm.
- ⓘ The washer should be on the outside of the strut channel and the strut channel nut should be on the inside.
- Tighten the screws with a 3/8 inch wrench.
- This is what the node looks like attached to two strut channel arms.

To reassemble your device, follow these instructions in reverse order.