

The Sound Meter Holder
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Picture 1: The final component for holding the sound meters.



Picture 2: The base for the rod to fit into.

Summary

The background behind this project comes from an ordinance which requires that vehicles used on the water should not produce sound levels greater than 90 dB when subjected to a stationary test procedure designated by the Society of Automotive Engineers (SAE). There are certain requirements for the sound meter as part of the testing procedure, which have been met. There are also additional requirements for placement of the sound meter during the testing procedure. These requirements are that the sound meter is positioned 3.3 behind the exhaust and 4 to 5 ft above. Currently, members of the Ottawa County Sheriff's Department enforce the ordinance. The patrol boat is pulled alongside and lashed to the suspect boat for the testing. The officer must stand at the back corner of the boat and hold the meter out over the water for the test. The result of exceeding 90 dB is a fine, and the boat must be removed from the water until it has been fixed.

The goal of this project was to alleviate a few potential problems with the testing method. Most importantly, the officer is in a precarious position while trying to hold the sound meter over the water. There is the chance of slipping or falling into the water, which would result in the sound meter falling along with whatever devices the officer happened to be wearing at the time. Any slip is a possible cause of injury to the officer, which would be even worse. In the addition to that problem, there have been complaints recently about the testing procedure. The complaints are that the procedure is not being followed correctly. They could be justifiable because it is difficult for the officer to hold the sound meter in the exact same placement every time, and various officers might hold the meter differently. Something was required to solve the problems.

To prevent any possibility of complaint, the product must take the operator out of the equation. The device must be able to hold the sound meter in the same position every time, and once the operator places it, he/she can step away and have it remain in a stationary position. This means no matter who is testing or what boat the testing is being performed on, the device will be placed according to the SAE procedure. It should be easy and quick to position so that it actually gets used. The sound meter needs to be secured, and the operator should not be placed in any more precarious position than without the product.

Initially, possible concepts allowed for the device to be constantly mounted on the boat, using a pin connection or a ball joint. The device would extend over the water by telescoping or being the correct length, and the sound meter would be secured in a full or partial enclosure. This was changed when it was decided that the device might be in the way if mounted.

The final design uses a partial enclosure for the sound meter. The enclosure currently attaches to a modified, telescoping boat hook of the type already used on the boat, for which there is an available storage spot. Potentially, it could be attached to the boat hook already on the boat so only one is needed rather than two, but that would mean every boat must have that specific hook. The idea is to keep things simple and not add extra hassle. There is a base plate attached to the boat with a tube attached that the boat hook is placed into during testing. When situated into the tube and extended, the sound meter is held in the required testing position.

