

PAYLOAD BALLASTING CONSIDERATIONS

Technical Note

Floation material is inserted into the profiler to ballast the Wirewalker so that it ascends at the desired rate. This means that as buoyancy changes from adding a payload, it must be counterbalanced. Additionally, it's ideal to keep the ballasting symmetrical so that the WW doesn't lean to one side (i.e. all the buoyancy is on one side). Floation material should be distributed on, and equally about, the centerline. When removing floation material, it's preferred to remove foam blocks located near the bottom (base) of the profiler to prevent the WW from wanting to invert (although the wire won't let it).

The top, leading edge (i.e. short cowling) holds the highest valued real estate on a WW due to the position being the first to "see" undisturbed waters. The most sensitive, or critical, measurement should hold this position when appropriate and typically goes to a turbulent sensor (such as MicroRider-1000) or a CTD.

If the prime position is already occupied, the up facing position on the trailing edge is the second most desirable mounting location. We have little to no indication that wake off of the wire has been problematic; therefore, the above recommendation is out of an abundance of caution.

While the upper portion of the WW is often the most desirable, optical measurements should not be integrated facing up as direct sunlight can have adverse effects on the measurement or degrade the sensing element. For this reason, optical sensors such as those used for dissolved oxygen or fluorescence, are best integrated horizontally. The sensing element should slightly poke through a suitable hole in the cowling. Priority is generally given to the leading edge, but some sensors are simply too long to fit well. In this case, or if there's no additional real estate, sensors are mounted on the trailing edge. Again, there is little to no indication that being mounted on the trailing edge has any effect on the upcast data.

Battery canisters are often the heaviest portion of a payload. It's best that they get mounted as low as possible, and typically on the opposite side of the primary measurement (i.e. DMO generally integrates a battery canister on the lower, trailing edge side). The WW can bear a battery canister behind each cowling.

If necessary (due to balancing issues or lack of real estate), the buoyant rail foam blocks can be cut/trimmed to fit behind mounted components such as loggers and/or battery canisters.

