

DIY Sample **Mooring Guideline**

Spoondrift Spotter can be deployed either as a free-floating drifter or in a moored configuration. For free-floating deployments, Spotter is ready to go. For that we include a stainless steel ballast chain and shackle, which should be attached before deployment.

For moored applications, you will need to design a mooring to anchor the Spotter to the seafloor. Here are some general guidelines based on our experiences. Spoondrift does not sell moorings, but since we do build moorings for our own Spotters, we want to share what we have learned from our own testing and from other users. This is a working document and we want to learn from your experiences so that we can share it back to the community.

DISCLAIMER: Please keep in mind that this Mooring Guideline is simply a collection of input from other Spotter users and our own learnings from past deployments. It is presented as an open-source document to assist you in developing your own mooring based on your own regional conditions and application objectives. The design presented in this document may not necessarily work for you or be appropriate for your particular location or application. Whether you use this mooring design or not, you and you alone are responsible for the deployment of your Spotter device and any associated moorings. Spoondrift makes no representations or warranties, either express or implied, as to the suitability of this mooring design or its fitness for your particular purpose. Similarly, Spoondrift is not liable for any damages caused as a result of your use or reliance upon this Mooring Guideline document. For more information, please refer to our Terms of Use, or contact us at support@spoondrift.co.

A couple of things to note.

The mooring design we describe here works well in the types of environments that we mostly work in (swell-dominated US West Coast conditions), but you may need to make adjustments based on your local conditions and deployment objectives.

Any mooring design for a wave-following surface tracker such as Spotter is a compromise. On the one hand, the mooring should keep the Spotter in place, and at the same time it should minimize any constraints to its motions so it can track the wave motions as precisely as possible.

Spotter is small and lightweight, and has thus limited buoyancy. Make sure to provide the correct anchor weight, and periodically check your mooring for fouling and growth which can add weight and drag to the mooring, and thus affect measurements and reduce buoyancy of Spotter.

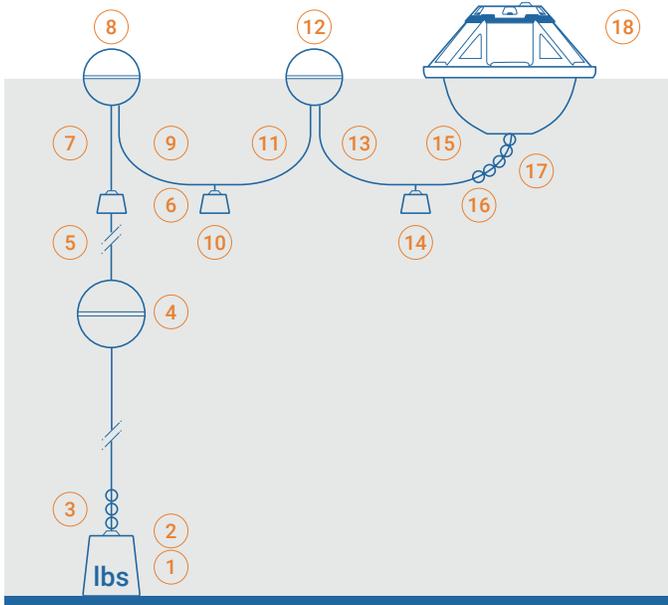
These guidelines are for a mooring depth of 50m but can be adjusted for different depths. We indicate below which parts we think should be adjusted if you were to deploy the same mooring design in water depths of 20m or 100m.

Make sure to use materials which are suitable for the marine environment. We use 316 stainless steel for all hardware components and 3-strand braided polypropylene for the mooring line.

Mooring Schematic.

The mooring design we consider here consists of a continuous line section with a series of sinkers and buoyancy elements (floats) attached. To keep things modular, we segmented the mooring into one vertical base section (mooring elements 1 through 5), and an upper section (elements 6 through 17), the latter consisting of a double catenary horizontal slack line (see Figure 1). This design allows adjustments for water depth to be made in the vertical base section (elements 3-5), leaving the top slack line section (elements 6-17) depth invariant.

The upper horizontal section of the mooring is meant to be dynamic and allow the Spotter to move as freely as possible. You could experiment with other materials (e.g. bungees) as well to provide extra freedom of motion. The surface floats in this section provide additional buoyancy which can help withstand the effects of biofouling and reduce the amount of maintenance needed. However, consider whether this surface signature is appropriate and optimal for your area before deployment.



Mooring Elements

1. anchor weight
2. chain
3. mooring line segment (3-strand 5/16" polypropylene)
4. midwater float - trawl float 8"/12"/18" (buoyancy ~6 lbs/ 24 lbs/80 lbs) for water depths 20 m/50 m/100 m
5. mooring line segment 20 m (for 50 m depth)
6. in-line sinker 3 oz
7. mooring line segment 5 m
8. surface float - trawl float 8"
9. mooring line segment 10 m
10. in-line sinker 2 lbs
11. mooring line segment 10 m
12. surface float - trawl float 8"
13. mooring line segment 10 m
14. in-line sinker 1 lbs
15. mooring line segment 10 m
16. shackle-swivel-shackle
17. ballast chain Spotter (included with Spotter)
18. Spotter

line section	50 m depth	20 m depth	100 m depth
3	40	10	90
5	20	20	25
7	5	5	5
9	10	10	10
11	10	10	10
13	10	10	10
15	10	10	10
Total length	105 m	75 m	155 m

Build Your Own Mooring.

Prepare the main mooring line

- Measure the main mooring line and cut the proper length for your water depth. For 50 meter water depth this equals 105 m.
- Measure and mark each location of the floats and sinkers on the main mooring line. Start measuring from the bottom of the line (where the anchor weight will be attached) and label each mark so it is easy to track what goes where.
- Splice in thimbles at both ends of the main mooring line.

Attach the floats

- Attach floats at the appropriate points along the mooring. To do this, we generally splice in a small section of polypropylene line to the main mooring body and attach a thimble to the loose end, which allows the float to be easily connected with a shackle and later removed for storing or mooring recovery.

Attach the sinkers

- Attach the three sinkers at the marked locations on the main mooring body. Note that there are 3 different weights and make sure that the right weight is attached at the right location on the mooring line.

Set up weight and bottom chain

- Attach the bottom weight to the mooring. We sometimes use a standard kettlebell with a section of chain looped through the handle which is attached to the base of the mooring line by two shackles and an eye-and-eye swivel.

Connect mooring to Spotter (16)

- Take the upper end of the mooring line and attach it to the loose end of the Spotter ballast chain with two shackles and an eye-and-eye swivel.

Your Shopping List.

Hardware

- 8 bow shackles 5/16" with pins
- 8 thimbles 5/16"
- 3 sinkers of different weights: 3oz, 1lbs and 2lbs + hardware to attach these
- 2 eye-and-eye swivels 5/16"

Chain and Line

- Polypropylene line 5/16"
- Proof coil chain 1/4", cut to 3ft length

Floats

- 2 trawl float 8" centerhole
- 1 trawl float 12" centerhole

Anchor weight

- anchor weight: 100lbs, for example a kettlebell

Recommended online resources for mooring materials:

<https://www.seamar.com>

<https://www.iboats.com>

<https://westmarine.com>

If you have any comments or suggestions for improvements, please let us know! You can reach us at support@spoondrift.co.