

User's Guide for:
SeaSonde[®] Radial Site
Antenna Assembly and
Installation



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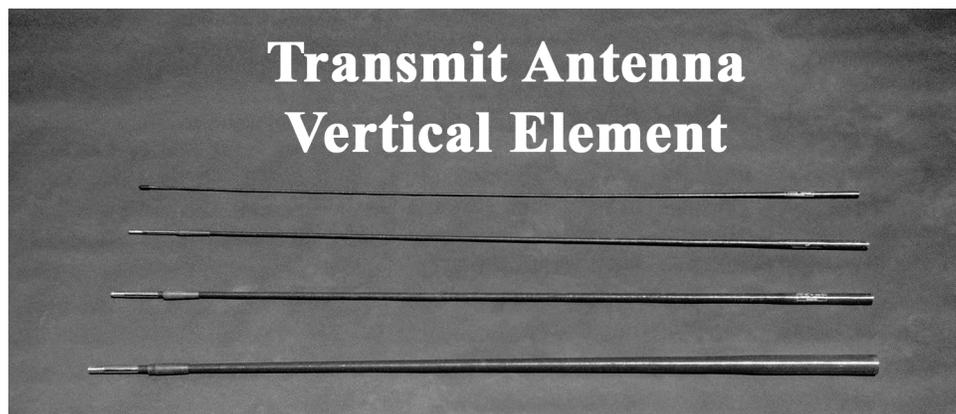
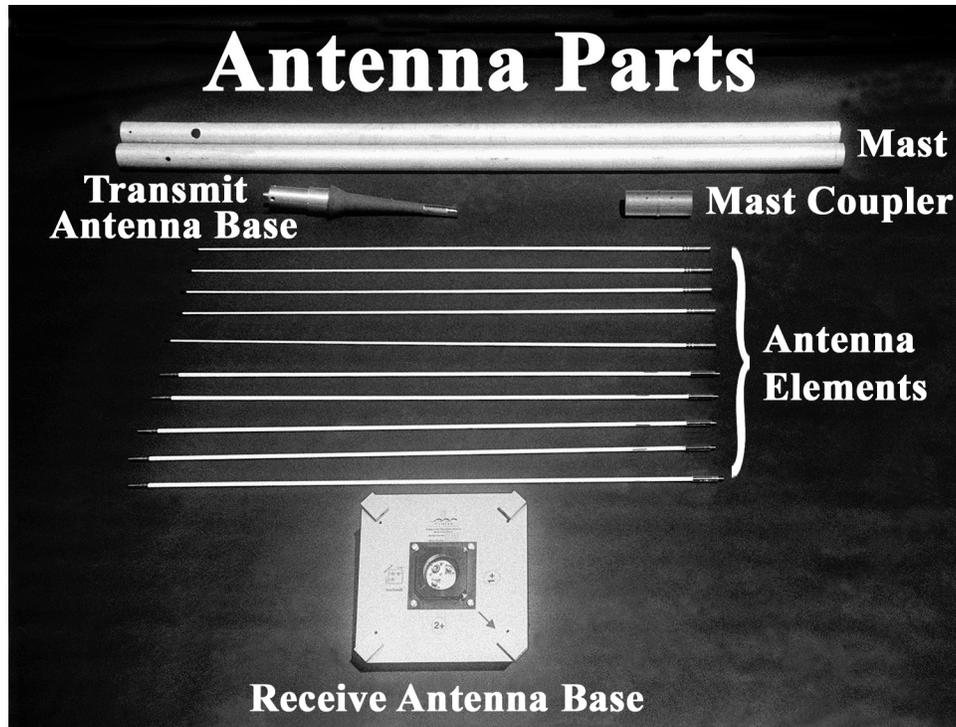
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Please read the disclaimer on the last page of this publication.

This guide contains **four sections**:

1. **Receive Antenna Assembly**
2. **Transmit Antenna Assembly**
3. **Antenna Installation**
4. **Disclaimer**

Here are the **Antenna parts** for your SeaSonde:

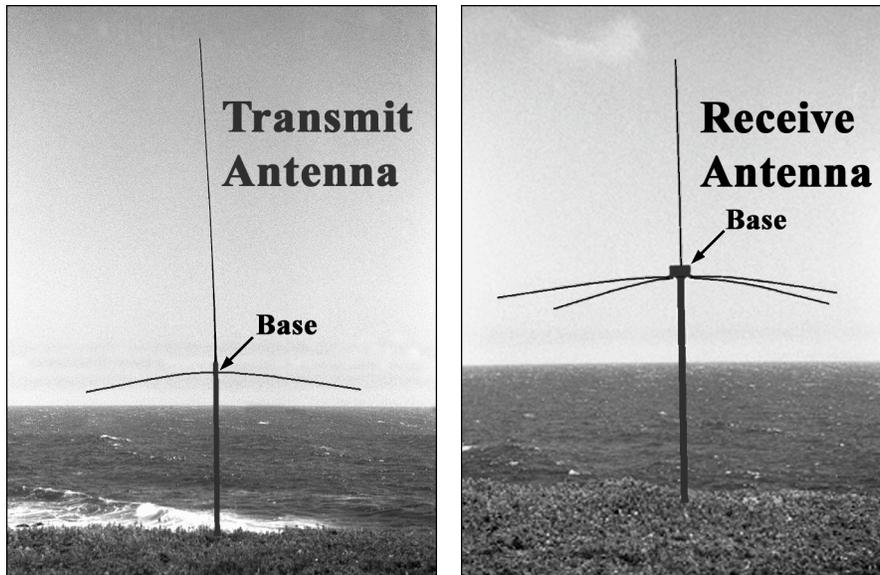


Receive and Transmit Antennas use the **same kind** of **Mast**, which is the **gray pipe** that **supports** the Base.

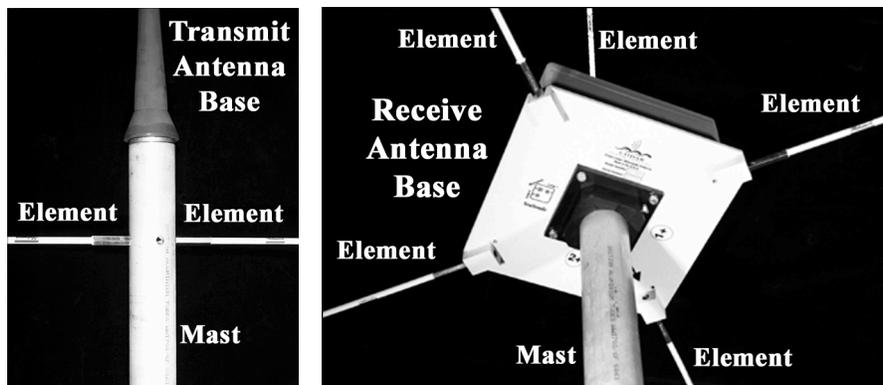
White Antenna Elements are used for **both Antennas**, except for the **Transmit Antenna vertical Element**.

The **Transmit Antenna vertical Element** is **brown** in color, and is **longer and heavier** than the Receive Antenna Elements.

When the Antennas are assembled, they **look like this**:



The Receive Antenna Base is **much larger** than the Transmit Antenna Base, because it **contains electronics**:



Section 1: Receive Antenna Assembly

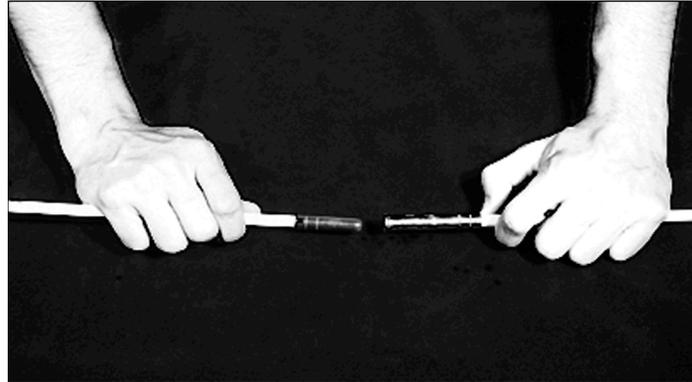
To assemble the Receive Antenna, begin by putting together **five Antenna Elements**, **four horizontal** and **one vertical**.

Each Element has either **one** or **two sections**. The **operating frequency** of your SeaSonde determines how many sections each Element should have.

If your SeaSonde operates at **25 MHz** (megahertz) **or higher**, use **one section** for each Element.

For operating frequencies **below 25 Mhz**, use **two sections**, because of **longer wavelength**.

For **two-section Elements**, assemble by inserting one section **firmly** and **completely** into the other:



Wrap the metal coupler (where two sections connect) completely with **electrical tape** to **protect against corrosion**.

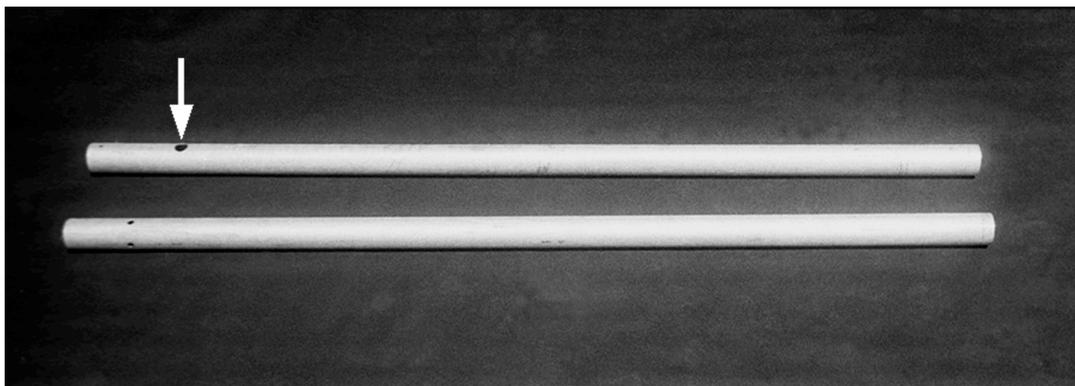
Mount the threaded end of the **vertical Element** on top of the Receive Antenna Base.

Put a little **non-conductive silicone grease** on the **threads** of Antenna Elements before mounting. This **prevents** the threads from **seizing**. Silicone grease is available from **hardware stores** or **industrial suppliers**:

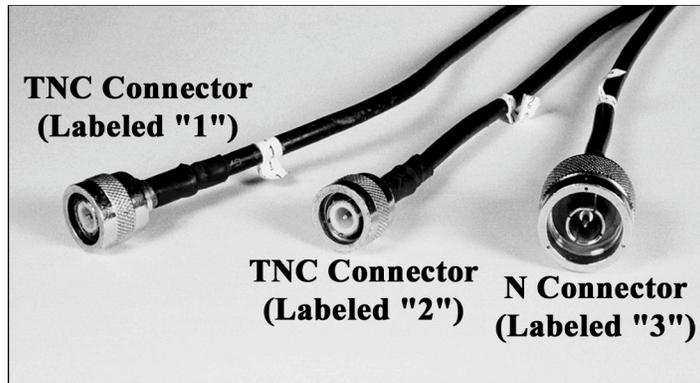


Be sure to **tighten** securely with a wrench but be very careful not to over tighten so that the base socket starts to turn.

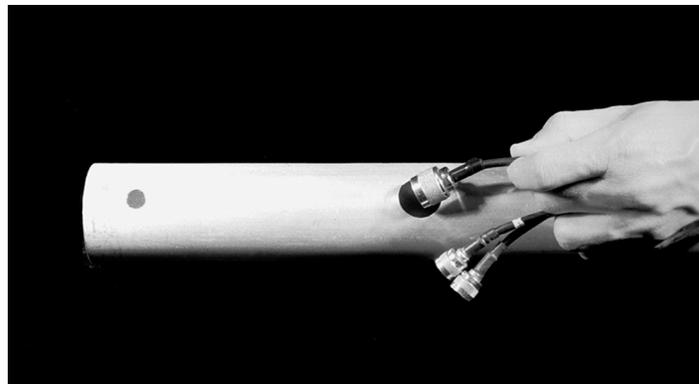
One of the Mast pipes provided with your SeaSonde has a **large hole** near **one end**:



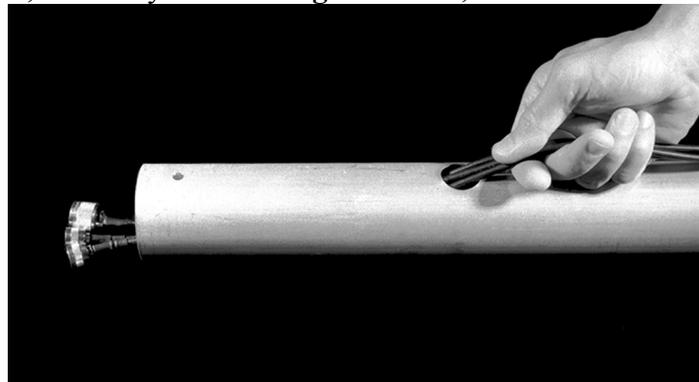
Three cables lead to the Receive Antenna, with **two “TNC” connectors** and **one “N” connector**. The wires are labeled with **white tags**. Notice the N connector is larger than the TNCs:



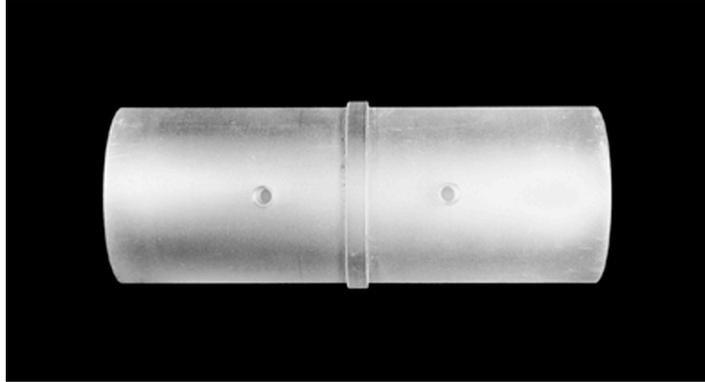
Insert the **wires** leading to the Receive Antenna into the **large hole** at one end of the Mast pipe. Feed the wires **one at a time**. Start with the wire that has an **N connector**:



Gently push the wires, until they **feed through** the mast, and the connectors **appear** at the end:



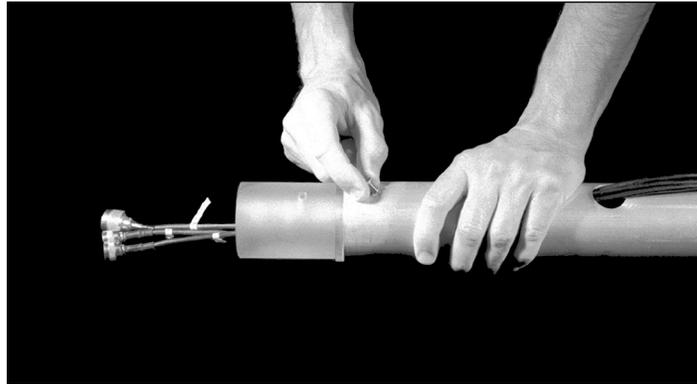
A **plastic Mast Coupler** is included with your SeaSonde Antenna parts:



Feed the wires **through** the Mast Coupler, one at a time:

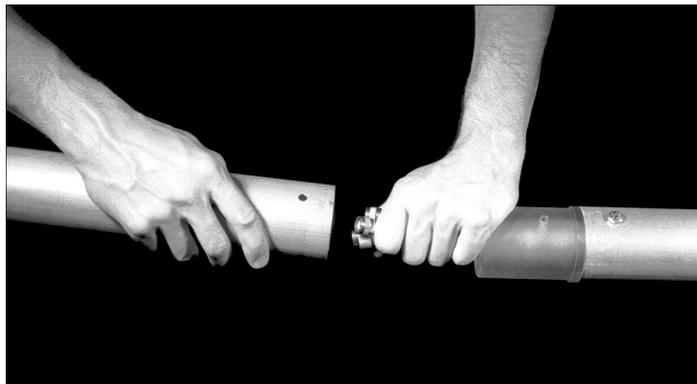


Attach the Mast Coupler to the Mast Pipe with **one bolt**:

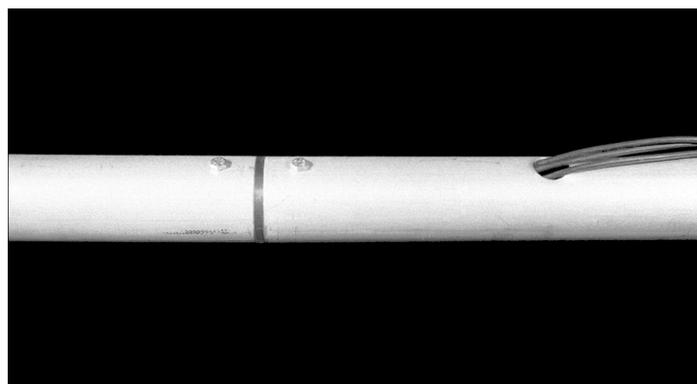


Tighten gently with a wrench. **Do not overtighten**. The Coupler's **threads** are **easily stripped**.

The **remaining** Mast Pipe has a **single hole** near one end. Feed the wires into the pipe:



Assemble the Mast Coupler to the end of the pipe. Fasten with one bolt. Tighten with a wrench. Do not overtighten:

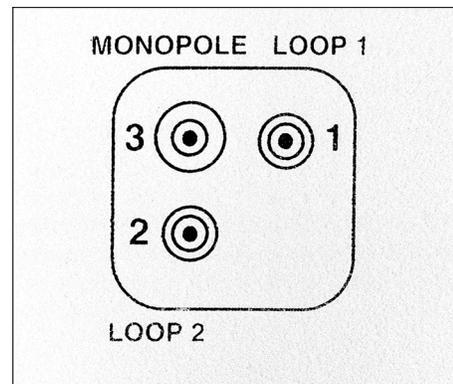
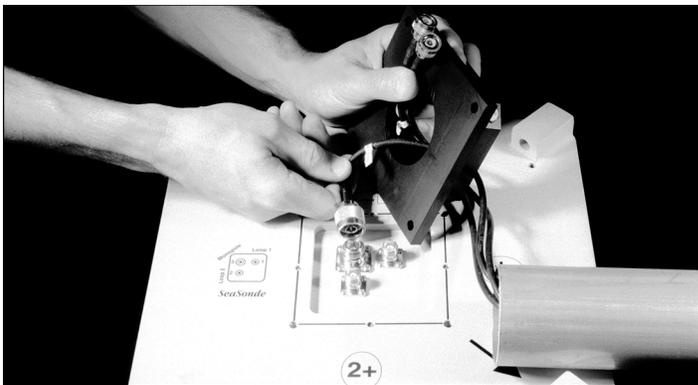


Gently push the wires through the pipe until they **appear** at the **opposite end**.

Remove **all four bolts** holding the **black mounting sleeve** to the Receive Antenna Base:

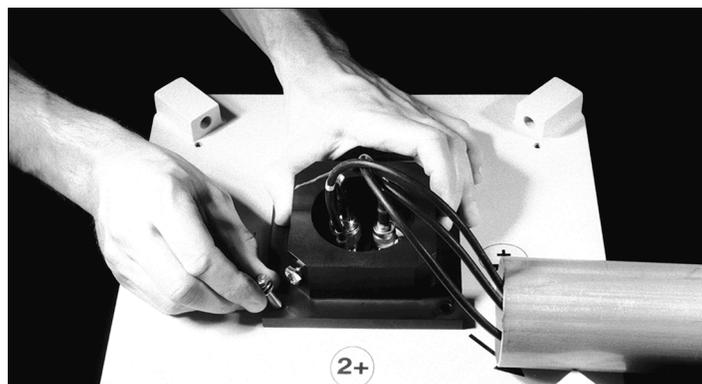


Connect all three connectors to their **corresponding outputs** in the middle of the Antenna Base. A **small diagram** is printed on the Antenna Base to show how the outputs are **numbered**:



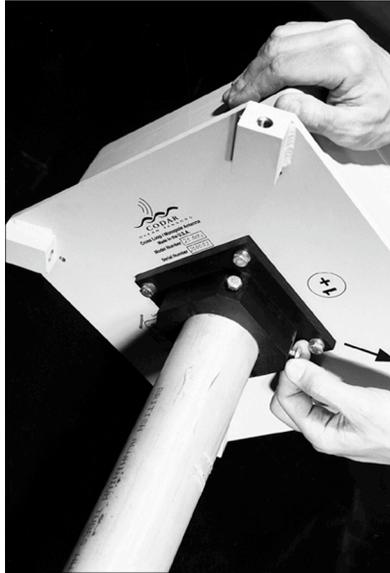
Do not use a **wrench** to tighten **electronic connectors**. Tighten them **firmly by hand**.

Reattach the Receive Antenna Base sleeve with four bolts:



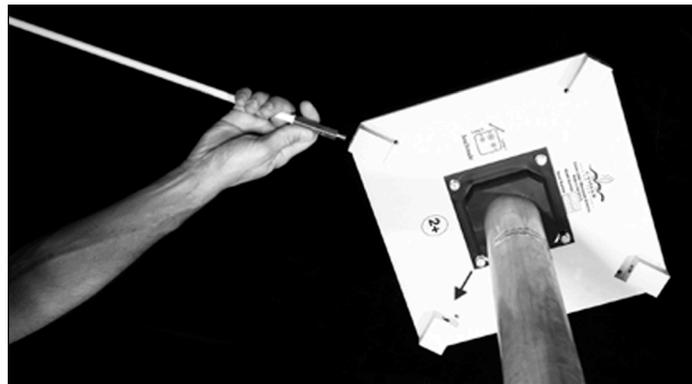
Tighten securely with a wrench.

Mount the Receive Antenna base to its supporting mast, using **two bolts**:



Tighten securely with a wrench.

Attach **four complete horizontal Elements** (**one or two sections each**, depending on **operating frequency**, please see page 3) to the Receive Antenna Base. Remember to add silicone grease to the threads:



Tighten securely with a wrench.

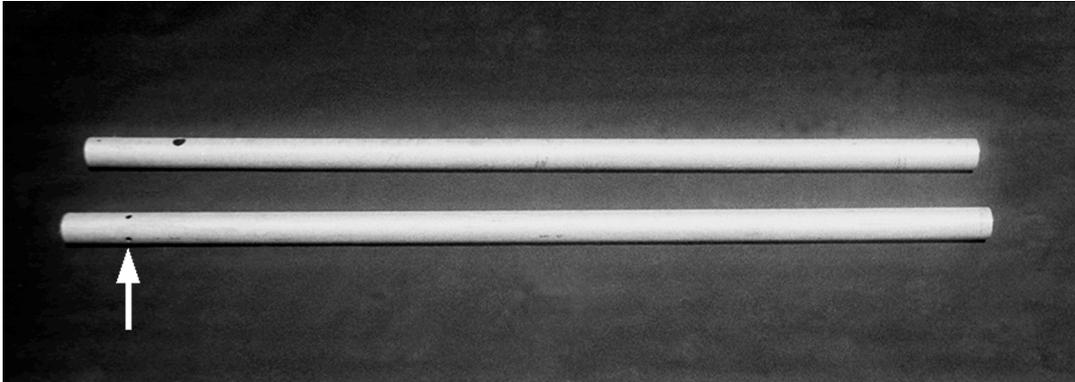
The Receive Antenna is now **assembled** and **ready to mount**.

Section 2: Transmit Antenna Assembly

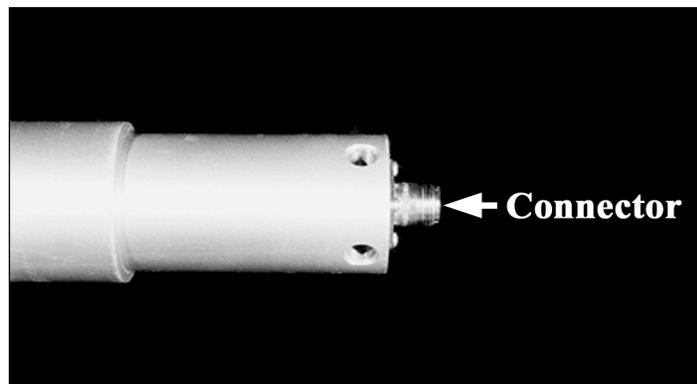
Begin by putting together a two-section Mast, **as you have done** for the Receive Antenna.

The Transmit and Receive Antennas use exactly the **same kind of Mast**.

One of the Mast Pipes has **four holes** near one end:



The Transmit Antenna base has a **connector** and **four threaded holes** at one end:



Only **one cable** leads to the Transmit Antenna, with an “**N**” connector:

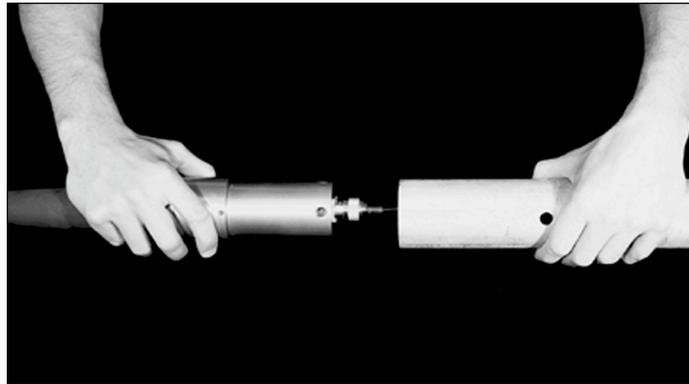


The heavy cable **feeds through** the Transmit Antenna Mast in the **same way** as the three cables leading to the Receive Antenna.

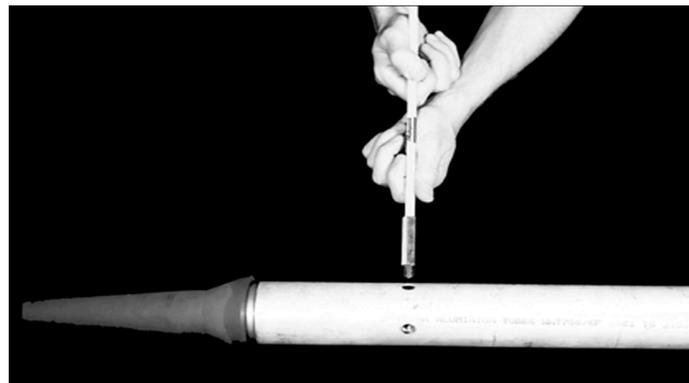
Connect the **cable** leading to the Transmit Antenna to the **connector** at the Transmit Antenna base.

Tighten the connector firmly **by hand**. Do not use a wrench.

Insert the **Transmit Antenna base** into its supporting mast:

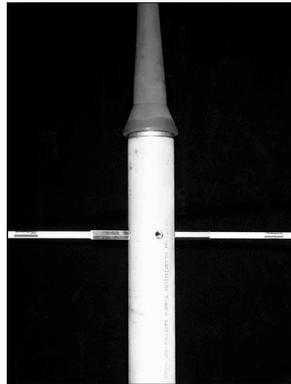


Line up the **four holes** on the Transmit Antenna Base with the four holes in the Mast. Mount **two complete (two section)** Antenna Elements to the Transmit Antenna Base. Apply **silicone grease** to the threads before mounting:



Tighten securely with a wrench.

The Transmit Antenna **usually** has **two horizontal elements opposite** each other, in the form of a **cross**:



In **some installations**, **four horizontal Elements** may be needed. This is why **four bolt holes** are provided. If you are not sure whether your Transmit Antenna needs two or four horizontal Elements, **contact Codar Ocean Sensors**.

The Transmit Antenna **vertical Element** can be either **two** or **four sections**.

Operating frequency determines whether your SeaSonde needs two or four sections for the Transmit Antenna vertical Element.

If your SeaSonde operates at **25 MHz** (megahertz) or above, you will need **two sections**.

Operating frequencies **below 25 MHz** require **four sections**, because of **longer wavelength**

This is the same principle that applies to Receive Antenna Elements, except that the Transmit Antenna horizontal Elements **are always two sections**.

Attach the **complete** (two or four section) vertical Element to the Transmit Antenna base:



Tighten **firmly by hand**. Do not use a wrench.

Assembly of your SeaSonde Transmit Antenna is **complete**.

Section 3: Antenna Installation

Wherever you mount your Antennas, it is important to **aim** them in the **proper direction**.

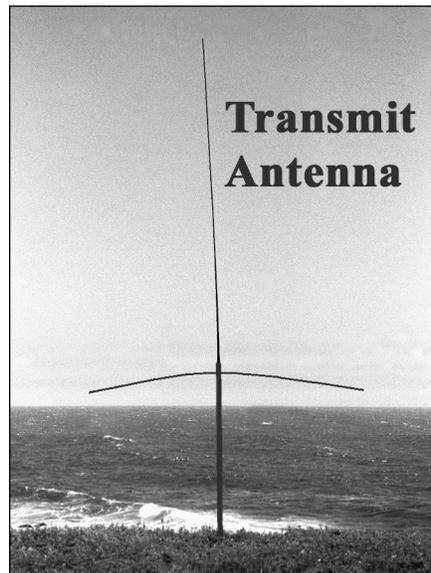
To aim the Receive Antenna, look at the **underside** of the **Base**:



Point the **arrow** toward the **ocean**.

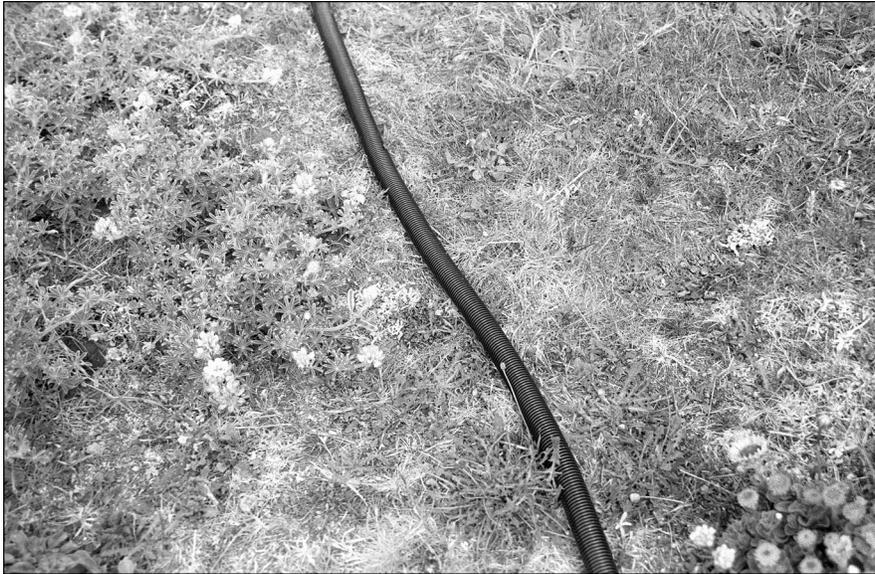
The **location** of the **Receive Antenna** and the **orientation** of its **horizontal Elements** must be measured using a GPS (Global Positioning System) device. For instructions on how to do this, consult the *Antenna Pattern Measurements Guide*.

The Transmit Antenna should be aimed so its horizontal elements are **parallel** to the **coastline**:



A **high degree** of **accuracy** is **not necessary** while aiming Antennas. After installation, adjustments can be made to SeaSonde **software** that **correct small inaccuracies** in how Antennas are aimed. This is a unique feature of SeaSonde. Please see the *Antenna Pattern Measurements Guide* for more on how these adjustments are done.

Cables leading to SeaSonde Antennas can be **laid** on the **ground** if they are protected by **plastic sleeving** material, which can be purchased at electronic suppliers:



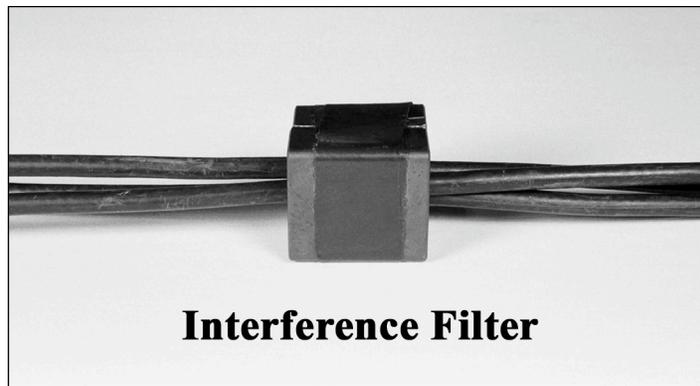
In some situations, it may be better to bury cables for maximum protection.

Keep Transmit and Receive cables **separate** to maximize the **sensitivity** of your SeaSonde.

Make a **coil** near where the cable(s) feed(s) into the Mast. A **loop** of **4-5 turns**, with a **diameter** of **30 cm. (1 foot)** reduces the effect of **radio signals** that **may interfere** with SeaSonde. Use this method for **both** Receive and Transmit Antennas:



Another way to get rid of **radio frequency interference** is to use a filter, which consists of a **block of metallic substance** called *ferrite*, which surrounds the cables. Filters are only used on Receive Antenna cables:



For information on how to use filters, please contact Codar Ocean Sensors.

Antennas are best mounted **close to water** with **few or no obstructions nearby**. **Non-metallic rope** can be used to **steady** Antennas in areas where **high winds** are likely:



Walls or buildings are **obstructions** that may interfere with SeaSonde. However, such mounting locations are sometimes the **only available choices**:



Note the building is surrounded by **barbed wire**. **Security** is an **important consideration** where **theft** and **vandalism** are likely.

Antennas can be mounted to a **fence**. The Antenna **Mast** is best **attached directly** to a **fence post** for **maximum strength** and **stability**:



For more details on how to **select Antenna sites**, please refer to the *Antenna Site Selection Guide*.

Antenna Masts are often mounted in the **ground**, where pouring a **concrete base** is a good idea:



Antenna installation methods **vary greatly** from site to site. This Guide gives **general principles**. To make a **final decision**, you may need **assistance** from technical staff at Codar Ocean Sensors.

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