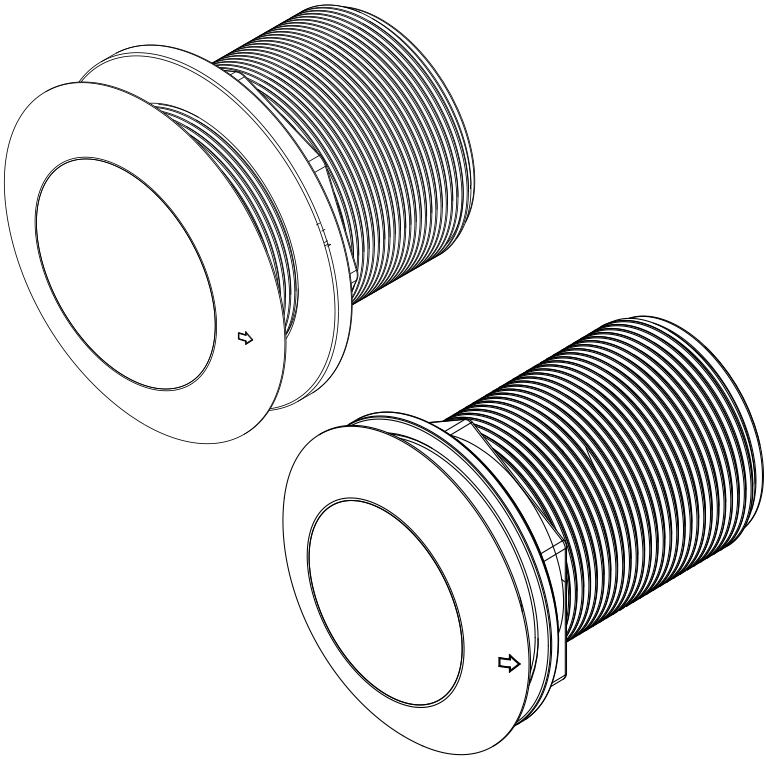
MMTBTENAE023

Echonautics®
soundwave innovation



BT70xxx / ST70xxx series
BT87xxx / ST87xxx series

WARNING AND INSTALLATION MANUAL

1. Warranty and Warnings

AvMap Srl warrants every unit to be free from defects in material and workmanship under normal use and service for a period of 36 months from original retail purchase. During the warranty period, AvMap Srl will repair or replace any component which fails in normal use without charges for parts or labour. Technological developments, modifications and upgrades of software are not covered by warranty (except commercial decision). To receive warranty service, contact your local authorized dealer for shipping instructions. The product should be securely packed with its tracking code clearly written on the outside of the package, shipping to be paid by the customer. Include a copy of the original sales receipt as the proof of purchase. This limited warranty does not extend to any product which has been subjected to misuse, neglect, accident, incorrect wiring or improper installation.
AvMap Srl reserves the right to repair or replace the device at its sole discretion.
For more warranty information please see the website: **www.avmap.it**

For technical advice or assistance contact:

North America:
AvMap Satellite Navigation Inc
25 Enterprise Zone Drive,
Riverhead, NY 11901, USA
+1 800 363 26 27
info@avmap.us

EMEA, APAC:
AvMap Srl
Viale Zaccagna 6,
54033, Carrara (MS), Italy
+39 0585 784044
support@avmap.it

IMPORTANT: Please read the installation manual completely before first operation and follow the precautions and instructions for the highest performance of the transducer and to reduce the risk of property damage or personal injury. If you have any questions, please contact customer service or your local dealer.

WARNING: Check the installation manual of the Echosounder system you connect the transducer to for product warnings and other important information.
WARNING: Always wear proper safety gear during transducer installation.
WARNING: Do not install bronze transducers in any metal hull. The hull may be damaged along with the transducers, due to electrolysis corrosion.
WARNING: Do not install a bronze housing transducer in a hull with a positive ground.
WARNING: Always respect the transducers power rate when selecting the transducer type on the sounders system menu. Selecting a different power rate might damage the transducer and sounder equipment.

CAUTION: Risk of electric shock!
Do NOT connect or disconnect the transducer before completely powering down your Echosounder. Failure to power down may result in electric shock and/or damage to your equipment since transducers employ powerful electrical impulses.
CAUTION: Always operate the transducer in water. Operating in air will overheat and damage the transducer.
CAUTION: Do not install the transducer in the engine compartment or other hot places. The transducer may fail if it overheats.
CAUTION: The arrow on the top of the transducer must point toward the keel or centreline of the vessel. This will align the angle of the element inside the transducer with the deadrise angle of the vessels hull.
CAUTION: Do not pull, carry, or hold the transducer by its cable; this may sever the internal connections and damage the transducer.

CAUTION: Never use solvents. Cleaners, fuel, sealant, paint and other products may contain solvents that can damage transducer parts.

2. Product description

Echonautics BT70, ST70, BT87 and ST87 series are low-profile transducers for thru hull installation in vessels to match deadrise to specific angle.
Echonautics transducers connects to compatible Echosounders and Fish Finders to send and receive signals in order to feature bottom depth, detecting fish and water temperature.

The transducer is the heart of an Echosounder or Fish Finder system that changes electrical pulses into sound waves or acoustic energy and back again. On command of the Echosounder or Fish Finder system the transducer sends out the sound waves and then receives the echoes, so the echosounder can interpret or “detect” what is below the surface of the water.

For more product details go to website **www.echonautics.com**

2.1 Content of the package

- Transducer model BT70xxx / BT87xxx / ST70xxx / ST87xxx
- Warning & Installation Manual
- Additional product label sticker

3. Connection to the Echosounder / Fish Finder system

WARNING: Refer to the Echosounder or Fish Finder system installation manual for product warnings and important information before connecting the transducer.
WARNING: Always match the transducers power rate when selecting the transducer type on the Echosounder or Fish Finder system menu. Selecting a different power rate might damage the transducer and Echosounder or Fish Finder equipment.
CAUTION: Do NOT connect or disconnect the transducer before completely powering down your Echosounder or FishFinder system. Failure to power down may result in electric shock and/or damage to your equipment since transducers employ powerful electrical impulses.

Each Echosounder and Fish Finder brand/model uses their specific connector for transducer connection.
Check the installation manual of your Echosounder or Fish Finder system for the PIN connector that is required for transducer connection and ensure the PIN connector of your Echonautics transducer matches the Echosounder or Fish Finder system.

IMPORTANT: Echonautics transducers do not feature a transducer ID for automatic model recognition by the Echosounder or Fish Finder. Consult the manual of your Echosounder or Fish Finder to manually select the transducer type with the same characteristics of your connected Echonautics transducer:

- Power rate (300W, 600W, 1kW)
- CHIRP or traditional CW
- Frequency range (LOW CHIRP, MEDIUM CHIRP, HIGH CHIRP, DUAL 50/200 kHz CW)

NOTE: For more detailed instructions see the Echonautics “Integration Guide” supplied together with the Echonautics transducer.

4. Pre-installation

4.1 Tools and materials needed

- Safety glasses
- Dust mask
- Ear protection
- Angle finder
- Sandpaper
- Masking tape
- Waterproof electrical tape
- Drill
- 3 mm (1/8”.) drill bit
- Hole saw
- Adjustable wrench
- Marine sealant (suitable for below waterline)
- Mild household detergent or rubbing alcohol
- Grommets (optional)
- Water-based anti-fouling paint (mandatory in salt water)
- Cable ties

Additional items are needed for mounting in a fiberglass hull:

- Hol saw for hull interior
- Marine grade epoxy resin for fiberglass (cored fiberglass hulls)

4.2 Hull material

BT70xxx / BT87xxx series transducer housings are made of bronze material. Bronze housing is ecommended for installation in fiberglass or wood hulls.
ST70xxx / ST87xxx series transducer housings are made of stainless steel material. Stainless steel housing can be used for installation in all hull material.

WARNING: Do not install bronze transducers in any metal hull. The hull may be damaged along with the transducers, due to electrolysis corrosion.

4.3 Mounting location

The transducer must be in a location that ensures smooth, bubble-free flow of water across the face of the transducer (even at high speeds). Transducers should never be located aft of any protrusions or hull fittings on the bottom of the hull, as these may create bubbles which impede optimal performance of the transducer.
The best location is aft of the midway and as close to the keel or centerline as possible. When installing on a sailboat do not place the transducer too close to the keel because of sound beam “shading”. Place forward of the keel on sailboats. When determining a location be aware of acoustic noise. Acoustics noise comes from the propellers, shafts and other moving machinery.
The transducer sits flush to bottom of hull, there is no need for a fairing block. The ceramic inside the transducer housing is angled in degrees to match the vessels hull deadrise. Make sure the transducer tilt angle matches the deadrise angle of your hull at the mounting location.
Measure the deadrise angle of your vessels hull at the selected mounting location by using an angle finder or a digital level.

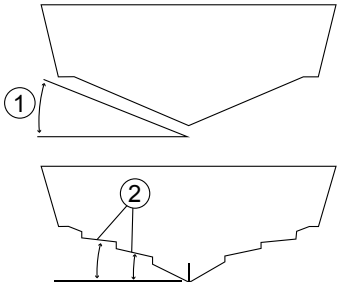


Figure 4.3 - Deadrise Angle

The deadrise angle (point 1) is the measurement of the angle between a horizontal line and the outer hull at a single point. Your vessel's hull may have several deadrise angles (point 2) depending on the hull shape. Be sure to measure the deadrise angle at the selected installation location.

Tilt angles matching hull deadrise	
18° tilted version:	for 16° to 24° hull deadrise
12° tilted version:	for 8° to 15° hull deadrise
0° tilted version:	for 0° to 7° hull deadrise

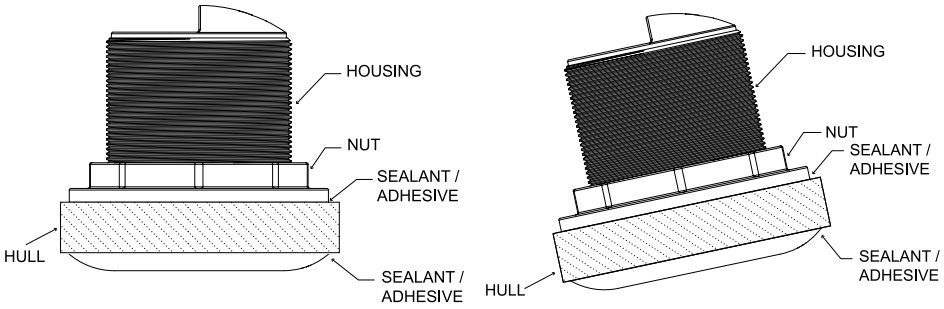
NOTE: The transducers tilt angle is written on the product label of the transducer.

CAUTION: The arrow on the top of the transducer must point toward the keel or centreline of the vessel. This will align the angle of the element inside the transducer with the deadrise angle of the vessels hull.
Once you have identified the best location, verify that you have sufficient room to tighten the mounting hardware from inside the hull.

4.4 Cable routing

When routing cable to the Echosounder or Fish Finder system do not place it near or parallel to other electrical cables, and especially avoid the ignition and alternator wiring. Take extra caution when routing cable through bulkheads and other parts of the boat. Try to avoid tearing the cable jacket and exposing the wiring to rough and harsh environments, which can damage the transducer. Use grommets to protect the cable if it passes through the bulkhead or other parts of the Vessel. Use zip ties or other suitable fastening equipment to secure the cable where necessary to protect it from damage. Avoid over-tightening zip ties and compressing the cable.

5. Installation



Tilt of transducer matching deadrise

IMPORTANT: Installation on any hull, and especially on cored fiberglass, should be performed by a trained technician. If not installed properly it can lead to water leakage and/or premature hull failure.

IMPORTANT: When you have determined a proper location, and before drilling any holes in the hull, inspect the location from the inside of the hull to make sure that installation will not interfere with bulkheads, plumbing or other obstacles.

IMPORTANT: Check the thread and hull hole saw dimension on the table below.

Transducer model	Thread size	Hull hole saw size
ST70xxx / BT70xxx series	60mm / 2.36”	62mm / 2.44”
ST87xxx / BT87xxx series	88mm / 3.46”	90mm / 3.54”

Table 5.1 - Thread and hull saw size

1. Drill a small 3mm / 1/8” from inside the hull where you want to place the transducer, positioning at the center of the intended transducer location. This hole will be the reference hole for external drilling.
2. From the outside enlarge the location hole to 6mm / 1/4” or whatever size needed for the pilot drill of the hole saw (see Table 5.1). Drill the pilot hole vertically, followed by the hole saw.
3. When you finished drilling remove rough edges around the hole and completely clean and sand the inside and outside surfaces around the hole. If there is any petroleum residue inside the hull, remove it with either mild household detergent or rubbing alcohol before sanding.
4. Take nut off the transducer housing.
5. Put a good amount (approximately 2mm / 1/16” thick) of a marine sealant/ adhesive compound around the lip of the housing that touches the hull. The sealant/ adhesive should also extend up the side wall of the housing, about 6mm / 1/4” higher than the combined thickness of the hull nut and hull. This will make sure there is sealant in the threads to seal the hull and to keep the hull nut secured.
6. From the outside of the hull insert the transducer by pushing the cable through the hole. Rotate the transducer and gently squeeze out any excess sealant.

IMPORTANT: Rotate the ARROW that is stamped on the outer outside lip of the transducer to point to the center line or keel of the boat so the internal angle aligns with the deadrise angle of the boat.

7. From inside the hull thread down the nut until it connects with the hull. The transducer housing has an ARROW on the plastic cap where the cable extends out. Tighten the hull nut to a snug fit making sure ARROW is pointing toward center line of Keel. The outer housing should not rotate or disturb the sealant while tightening down the hull nut.
8. Remove any excess sealant on the outside of the hull to make sure there is a smooth water flow over the face of the transducer.

WARNING: Do not use solvents on the face of transducer. Solvents will damage the transducer.

6. Checking for leaks

CAUTION: after installing a thru hull transducer do not leave the boat unattended for several days. After the adhesive/sealants has setup correctly, place the vessel in the water and check around for leaks immediately. Small leaks may not be immediately seen. The vessel should not be left in the water for more than 3 hours without checking for leaks. If there is a leak, repeat the installation procedure with extra care taken on steps 5 to 8.

7. Maintenance

7.1 Anti-fouling paint

Surfaces exposed to salt water must be coated with anti-fouling paint. Water-based anti-fouling paint should be applied to the hull of your vessel every six months or at the beginning of each boating season.

IMPORTANT: Use water-based anti-fouling paint only.

CAUTION: Never use ketone- based paint, because ketones attack many types of plastic and could damage the transducer.

7.2 Cleaning the transducer

Aquatic fouling accumulates quickly on the transducers surface and can reduce its performance. Remove the fouling with a soft cloth and mild detergent. If the fouling is severe, use a non-metallic scouring pad to remove growth. Wipe the transducer dry.

CAUTION: To avoid possible transducer damage or personal injury, use care when cleaning the transducer, particularly when attempting to remove severe fouling.

IMPORTANT: To prevent permanent damage to the surface of the transducer, do not use solvents such as mineral spirits, acetone, Methyl Ethyl Ketone (MEK), or similar products when cleaning. Do not use a power sander or pressure washer to clean the transducer.

8. Safety information

AvMap disclaims any liability deriving from an improper use or installation of the product in a way that may violate the regulations and safety. It is highly recommended that the installation of the product will be performed by a qualified maintenance technician. Consult the Installation manual for a correct installation procedure.

9. Technical specifications

Stick the product label
provided in the package here:

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support@avmap.it

Echonautics®
soundwave innovation

www.echonautics.com