GARMIN

Panoptix™ PS21-TR

Installation Instructions

Important Safety Information

> ⚠ **WARNING**

See the *Important Safety and Product Information* guide in the chartplotter or fishfinder product box for product warnings and other important information.

You are responsible for the safe and prudent operation of your vessel. Sonar is a tool that enhances your awareness of the water beneath your boat. It does not relieve you of the responsibility of observing the water around your boat as you navigate.

> ⚠ **CAUTION**

Failure to install and maintain this equipment in accordance with these instructions could result in damage or injury.

Always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding.

> *NOTICE*

When drilling or cutting, always check what is on the opposite side of the surface.

To obtain the best performance and to avoid damage to your boat, you must install the Garmin® device according to these instructions.

Read all installation instructions before proceeding with the installation. If you experience difficulty during the installation, contact Garmin Product Support.

Software Update

You may need to update the device software when you install the device or add an accessory to the device.

Loading the New Software on a Memory Card

You must copy the software update to a memory card using a computer that is running Windows® software.

NOTE: You can contact Garmin customer support to order a preloaded software update card if you do not have a computer with Windows software.

1 Insert a memory card into the card slot on the computer.
2 Go to www.garmin.com/support/software/marine.html.
3 Select **Download** next to the software bundle that corresponds with your chartplotter.

   NOTE: The software download includes updates for all devices connected to the chartplotter. Select the correct bundle that corresponds to the chartplotter to be updated. You can select See All Devices in this Bundle to confirm the devices included in your download.

4 Read and agree to the terms.
5 Select **Download**.

6 If necessary, select **Run**.
7 If necessary, select the drive associated with the memory card, and select **Next** > **Finish**.
8 Extract the files to the memory card.

   NOTE: The software update can take several minutes to load onto the memory card.

Updating the Device Software

Before you can update the software, you must obtain a software-update memory card or load the latest software onto a memory card.

1 Turn on the chartplotter.
2 After the home screen appears, insert the memory card into the card slot.

   NOTE: In order for the software update instructions to appear, the device must be fully booted before the card is inserted.

3 Follow the on-screen instructions.
4 Wait several minutes while the software update process completes.
5 When prompted, leave the memory card in place and restart the chartplotter manually.
6 Remove the memory card.

   NOTE: If the memory card is removed before the device restarts fully, the software update is not complete.

Registering Your Device

Help us better support you by completing our online registration today.

- Go to my.garmin.com.
- Keep the original sales receipt, or a photocopy, in a safe place.

Contacting Garmin Product Support

- Go to www.garmin.com/support for in-country support information.
- In the USA, call 913-397-8200 or 1-800-800-1020.
- In the UK, call 0808 238 0000.
- In Europe, call +44 (0) 870 850 1241.

Tools Needed

- #2 Phillips screwdriver
- 3 mm flat screwdriver

Mounting Considerations

- Placement of the transducer on a trolling motor depends on the type of trolling motor you have installed on your boat.
- You can mount the transducer on the motor of some electrically steered trolling motors, but you must make sure you can safely deploy and retract the trolling motor with the transducer attached.
- You must mount the transducer so it does not obstruct the motor from being placed in its storage cradle or prevent the motor from being stowed and deployed correctly.
- Mounting the transducer near strong magnetic fields interferes with the ability of the internal compass to measure the earth's magnetic field, and prevents calibration. Failure to properly calibrate causes some map features to be unavailable, and waypoints created in LiveVü Forward use the boat heading instead of the transducer orientation to calculate your position.
- You must mount the transducer as far from the motor as possible while keeping the transducer submerged. Placing the transducer on the barrel of the trolling motor or too close

to the motor on the shaft, can prevent proper compass calibration.

- To use the compass, you must mount the transducer on the shaft. The compass does not work when you mount the transducer on the motor.

Effective Forward Range

The transducer has an effective forward range of between five and eight times the depth of the water. For example, in 3 m (10 ft.) of water, the effective forward range is from 15 to 24 m (from 50 to 80 ft.). Water conditions and bottom conditions affect the actual range.

Installing the Transducer on a Trolling Motor Shaft

Assembling the Trolling Motor Shaft Mount Hardware

Use the M6 screws ① to attach the back of the trolling mount bracket ② to the front of the trolling mount bracket ③ around the trolling motor shaft.
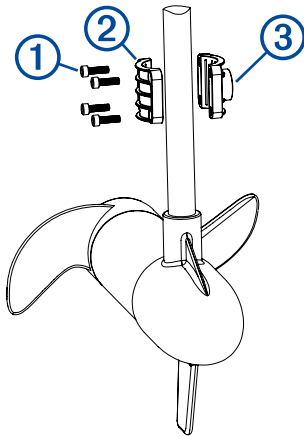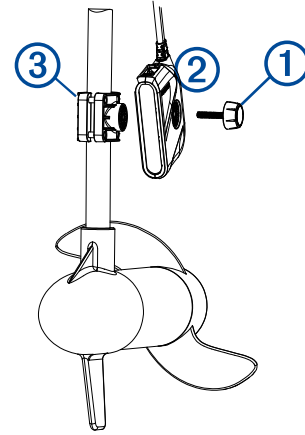

Installing the Transducer on the Trolling Motor Shaft Mount

NOTICE

You must secure the transducer cable to the shaft or other secure location during installation. Damage to the transducer cable wire or the cable jacket can cause transducer failure.

You should mount the transducer as far from the motor as possible. Placing the transducer too close to the motor can prevent proper compass calibration. Without successful compass calibration, the chartplotter does not display direction and coverage area indicators, but all other features function normally.

1 Use the enclosed knob ① or mounting bolt to attach the transducer ② to the trolling motor mount bracket ③.


2 Use cable ties to secure the transducer cable to the shaft or other secure location.
3 Route the Ethernet cable to the network switch or to the back of the chartplotter.
4 Route the power cable to a switched or unswitched 10-35 Vdc power source.
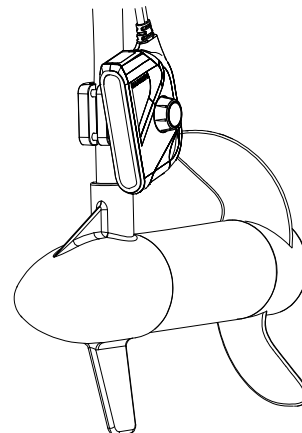
Adjusting the Transducer Angle on the Trolling Motor Shaft

The transducer should be tilted downward for optimal imagery.

1 With the transducer mounted on the trolling motor shaft, tilt the transducer downward between 15 ① and 30 degrees ② from the horizontal center of the trolling motor.
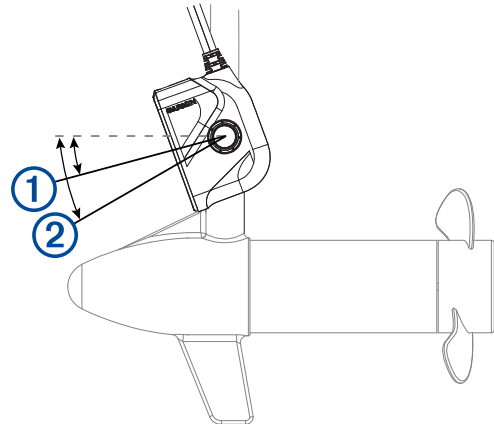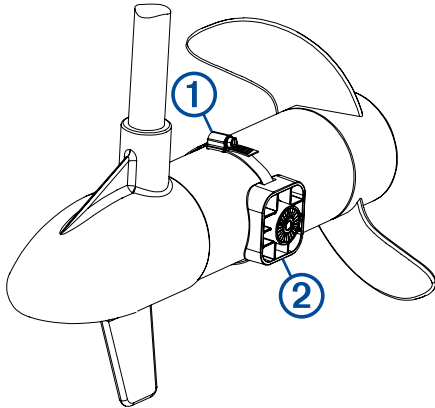

2 Tighten the knob or mounting bolt so the device does not move during use.

Installing the Transducer on a Trolling Motor

Assembling the Trolling Motor Mount Hardware

1 Insert the hose clamp ① through the slot on the trolling motor mount ②.

2 Slide the hose clamp around the trolling motor.
3 Tighten the hose clamp.

Installing the Transducer on a Trolling Motor

NOTICE

You must secure the transducer cable to the shaft or other secure location during installation. Transducer cable wire damage or damage to the cable jacket can cause transducer failure.

1 Use the enclosed knob ① or mounting bolt to attach the transducer ② to the trolling motor mount bracket ③.
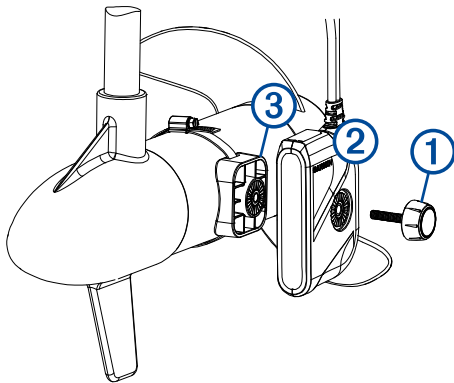
2 Secure the transducer cable to the shaft or other secure location.
3 Route the Ethernet cable to the network switch or to the back of the chartplotter.
4 Route the power cable through a switched or unswitched 10 to 35 Vdc power source.

Adjusting the Transducer Angle on the Trolling Motor

The transducer should be tilted downward for optimal imagery.

1 With the transducer mounted on the trolling motor, tilt the transducer downward between 15 ① and 30 degrees ② from the horizontal center of the trolling motor.
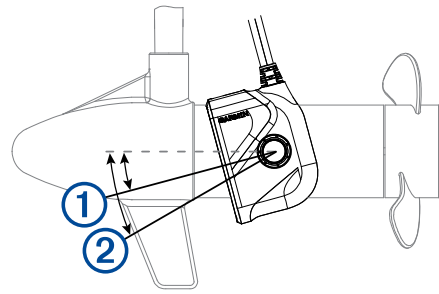
2 Tighten the knob or mounting bolt so the device does not move during use.
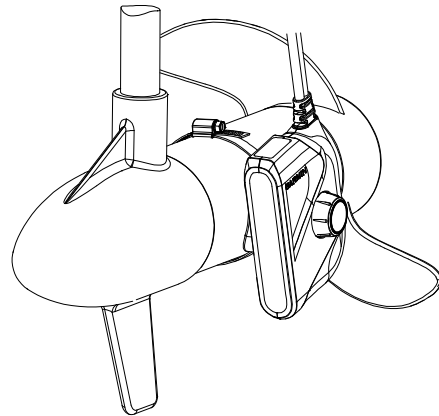
Connecting the Transducer to Power and the Garmin Marine Network

Before you can connect the device to the Garmin Marine Network and power, you must mount the device on the trolling motor.

⚠ WARNING

When connecting the power cable, do not remove the in-line fuse holder. To prevent the possibility of injury or product damage caused by fire or overheating, the appropriate fuse must be in place as indicated in the product specifications. In addition, connecting the power cable without the appropriate fuse in place voids the product warranty.

1 Route the cables using the appropriate tie wraps, fasteners, and sealant to secure the cables along the route, and through any bulkheads or the deck.
2 Install the o-ring and locking collar on the Garmin Marine Network connector.
3 Connect the bare-wire end of the power cable to a 10 to 35 Vdc power source and to the ground.
4 Select an option:
   • To connect the network cable on a boat equipped with a GMS™ 10 network port expander, connect the network cable to a port on the GMS 10.
   • To connect the network cable on a boat not equipped with a GMS 10 network port expander, connect the network cable to the network or the Panoptix port on your chartplotter.

Cable Routing Grommets

When routing cables through your boat, it may be necessary to drill holes to route the cables. Cable routing grommets can be used to cover cable installation holes. The grommets do not create a waterproof seal. If necessary, apply a marine sealant after installation to weatherproof around the grommet and the

cable. You can purchase grommets from your Garmin dealer or directly from Garmin at www.garmin.com.

Installing Locking Rings on the Cables

Before you install locking rings on the cables, you must route the cables.

To help make the cable-routing process easier, the locking rings are packaged separately from the cables. Each locking ring is packaged in a small bag with a number on the label for easy identification.

1 Separate the two halves of the locking ring ①.
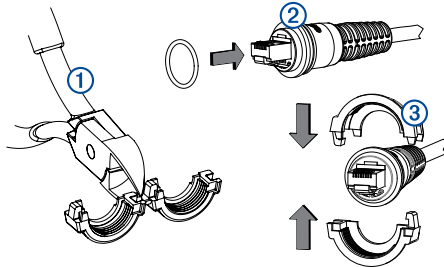
2 Insert the o-ring ② into the end of the connector.
3 Align the two halves ③ of the locking ring over the cable and snap them together.

Installation Diagram
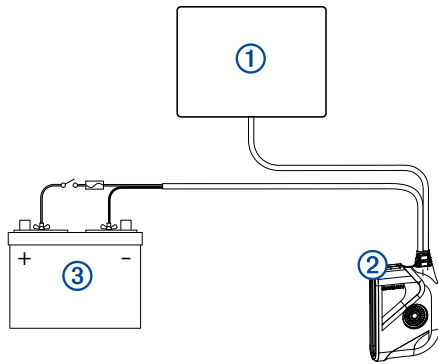
Item	Description
①	Chartplotter
②	Panoptix PS21-TR
③	Power source (switch is optional)

Calibrating the Compass

Before you can calibrate the compass, the transducer must be installed on the shaft far enough away from the trolling motor to avoid magnetic interference, and deployed in the water. Calibration must be of sufficient quality to enable the internal compass.

NOTE: To use the compass, you must mount the transducer on the shaft. The compass does not work when you mount the transducer on the motor.

You can begin turning your boat before calibrating, but you must fully rotate your boat 1.5 times during calibration.

1 From a ForwardVü or LiveVü Forward sonar page, select **MENU** > **Sonar Setup** > **Installation**.
2 If necessary, select **Use AHRS**.
3 Select **Calibrate Compass**.
4 Follow the on-screen instructions.

Maintenance

Cleaning the Transducer

Aquatic fouling accumulates quickly and can reduce your device's performance.

1 Remove the fouling with a soft cloth and mild detergent.
2 If the fouling is severe, use a scouring pad or putty knife to remove growth.
3 Wipe the device dry.

Anti-Fouling Paint

To prevent corrosion on metal hulls and to slow the growth of organisms that can affect a vessel's performance and durability, you should apply a water-based anti-fouling paint to the hull of your vessel every six months.

NOTE: Never apply ketone-based anti-fouling paint to your vessel, because ketones attack many types of plastic and could damage or destroy your transducer.

Specifications

Specification	Measurement
Dimensions (W x H x L)	32 x 118 x 84 mm (1.3 x 4.6 x 3.3 in.)
Weight	340 g (.75 lb.)
Max. power usage	8 W
Operating voltage	From 10 to 35 Vdc
Operating temperature range	From 0 to 40°C (from 32 to 104°F)
Storage temperature range	From -40 to 70°C (from -40 to 158°F)
Material	ASA plastic
Maximum range*	91.4 m (300 ft.)
Frequency	417 kHz
Fuse rating	4.0 A mini 32 Vdc

*Dependent upon transducer placement, water salinity, bottom type, and other water conditions.

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Panoptix™ PS 30/31

Installation Instructions

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> *NOTICE*

When drilling or cutting, always check what is on the opposite side of the surface.

This equipment should be installed by a qualified marine installer.

Registering Your Device

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Contacting Garmin® Product Support

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- In the UK, call 0808 238 0000.
- In Europe, call +44 (0) 870 850 1241.

Loading the New Software on a Memory Card

1 Insert a memory card into the card slot on the computer.
2 Go to www.garmin.com/support/software/marine.html.
3 Select **Download** next to "Garmin Marine Network with SD card".
4 Read and agree to the terms.
5 Select **Download**.
6 Select **Run**.
7 Select the drive associated with the memory card, and select **Next** > **Finish**.

Updating the Device Software

Before you can update the software, you must obtain a software-update memory card or load the latest software onto a memory card.

1 Turn on the chartplotter.
2 After the home screen appears, insert the memory card into the card slot.
   NOTE: In order for the software update instructions to appear, the device must be fully booted before the card is inserted.
3 Follow the on-screen instructions.
4 Wait several minutes while the software update process completes.
   The device returns to normal operation after the software update process is complete.
5 Remove the memory card.
   NOTE: If the memory card is removed before the device restarts fully, the software update is not complete.

About the Transducer

The transducer transmits and receives sound waves through the water, and relays sound-wave information to your Garmin sonar device.

Tools Needed

- #2 Phillips screwdriver
- 4 mm ($^5/_{32}$ in.) drill bit
- Drill
- Masking tape (optional)
- 13 mm ($^1/_2$ in.) Socket
- 13 mm ($^1/_2$ in.) Wrench
- Marine sealant

Mounting Location Considerations

- The transducer should not be mounted behind strakes, struts, fittings, water intake or discharge ports, or anything that creates air bubbles or causes the water to become turbulent.
- The transducer can place a significant strain on less-rugged trolling motors. Consider the weight and drag of the mounting hardware and transducer before mounting it on the trolling motor.
- The transducer must be in clean (non-turbulent) water for optimal performance.
- For optimal results, mount the transducer as close to the center line as possible. Mounting to one side can affect the handling of the boat.
- The transducer should not be mounted in a location where it might be jarred when launching, hauling, or storing.
- On single-drive boats, the transducer must not be mounted in the path of the propeller.
- On twin-drive boats, the transducer should be mounted between the drives, if possible.
- For the downward-facing transducer, the cables should be routed out of the transducer to the starboard side of the boat, with the logo on the transducer facing the port side of the boat.
- The forward-facing transducer should be mounted in a location that allows a view of the surface of the water in front of the boat.
- The forward-facing transducer should be mounted in a location that is out of the water at speeds over 40 km/h (25 mph).
- For a forward-facing transducer mounted on a trolling motor, the cables should be routed out of the transducer toward the

trolling motor (downward if mounted on the shaft, upward if mounted below the motor).

- For a forward-facing transducer mounted on a transom mount, the cables should be routed out of the transducer toward the transom.

## Transducer Mounting Angle Considerations

- The internal attitude heading and reference system (AHRS) sensor detects the mounting angle of the transducer in relation to the water surface. When the Use AHRS setting is turned off in the chartplotter installation menu, it is assumed the transducer is mounted at a 45-degree angle and the down-view transducer is mounted at a 0-degree angle.
- The higher the degree of the mounting angle and the more vertical the transducer, the less a strong bottom echo interferes with viewing targets in the water. To see more suspended targets, you should mount the transducer at a higher-degree, more vertical angle.
- To reduce rings that can appear with a strong bottom echo, you should mount the transducer at a higher degree, more vertical angle.

Installing the Transducer on a Transom

Assembling the Transom-Mount Hardware

1 Attach the transducer mount bracket ① to the transducer ② using four of the included 7 mm M4 mounting screws ③ and M4 lock washers ④.
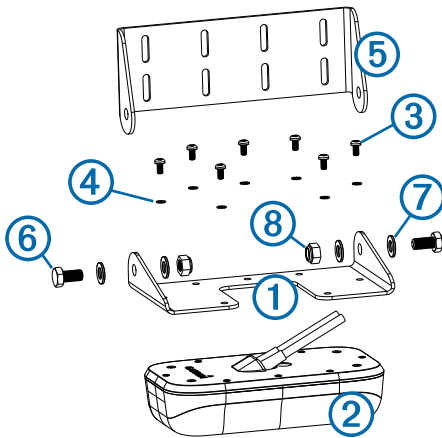
2 Attach the transducer mount bracket to the transom mount bracket ⑤ using the included 16 mm M8 bolts ⑥, M8 flat washers ⑦, and M8 lock nuts ⑧.
3 Route the Ethernet cable to the installation location of the network switch or to the back of the MFD.

NOTE: The cable should not be routed close to electrical wires or other sources of electrical interference.

TIP: Cutting the cables is not recommended, but a field installation kit can be purchased from Garmin or a Garmin dealer if cutting the cables is necessary.
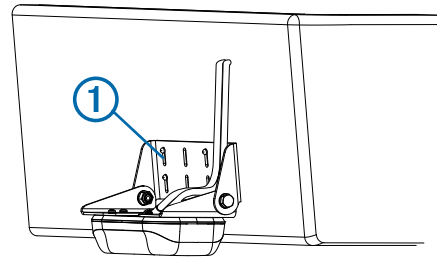
4 Route the power cable to a 12 Vdc power source.

Installing the Transom-Mount Hardware

avoid any cracking in the gel-coat layer when the screws are tightened.

1 Position the transducer mount ① so the bottom of the transducer sits below the water line.

2 Mark the location of the holes of the transducer mount.
3 Using a 4 mm ($^5/_{32}$ in.) bit, drill the pilot holes approximately 15 mm ($^{19}/_{32}$ in.) deep at the marked locations.
4 Apply marine sealant to four of the provided 8 mm M4 mounting screws, and attach the transducer assembly to the transom using the M4 screws and M4 lock washers.

TIP: On boats with thinner hulls, you can place a wood backing block inside the hull at the mounting spot to lessen the pressure on the mounting screws.

5 If possible, route the cables to come out of the transducer on the starboard side.

NOTE: If you must route the cables to come out the port side, you must select the Flipped option in your chartplotter installation menu for an accurate display.

6 For the downward-facing transducer, adjust the mount so the transducer points straight down.
7 For the forward-facing transducer, adjust the mount so the transducer points toward the front of the boat at an angle based on the transducer mounting angle considerations.
8 For the forward-facing transducer, adjust the bolt tension to allow the mount to close if the transducer collides with an object.

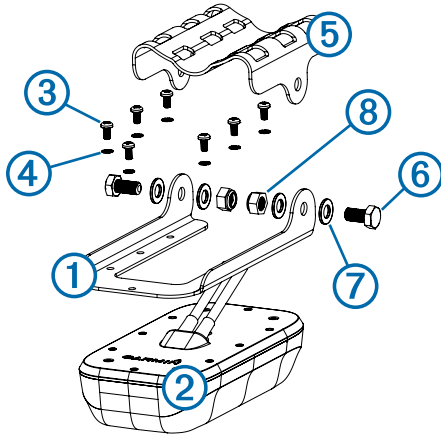# Installing the Transducer on a Trolling Motor

Trolling Motor Mount Considerations

- Placement of the transducer on a trolling motor depends on the type of trolling motor you have installed on your boat. Check with your trolling motor manufacturer for information on the proper placement of your trolling motor mount.
- The transducer should be mounted on the shaft on most cable-steered trolling motors, because the motor may not be rugged enough to support the weight of the transducer and mount. This mounting location blocks the view directly below the trolling motor, but allows for a longer-range forward view because there is less bottom interference. Mounting the transducer on the shaft also offers more protection, and the weight of the transducer and mounting hardware place less strain on the trolling motor system
- The transducer should not be mounted on the motor of some types of trolling motors, because the transducer can damage the steering cables and bearings, and it can hit the boat hull during deployment and retraction.
- The transducer can be mounted on the motor of some hand-steered and wireless trolling motors, but you must make sure you can safely deploy and retract the trolling motor with the transducer attached.
- On trolling motors with steering cables, place the transducer as close to the center line of rotation as possible to decrease the resistance on the motor.

- Mount the transducer so it does not obstruct the motor from its storage cradle or prevent the motor from being stowed and deployed correctly.

Assembling the Trolling-Mount Hardware

1 Attach the transducer mount bracket ① to the transducer ② using the included 7 mm M4 mounting screws ③ and M4 lock washers ④.

2 Attach the transducer mount bracket to the trolling mount bracket ⑤ using the included 16 mm M8 bolts ⑥, M8 flat washers ⑦, and M8 lock nuts ⑧.

## Attaching the Transducer to a Trolling Motor Shaft

1 Insert the hose clamps ① through the slots on the trolling motor mount ②.
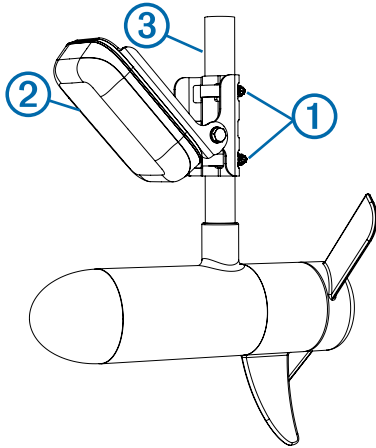
2 Slide the hose clamps around the trolling motor shaft ③.
3 Tighten the hose clamps.
4 Secure the transducer cable to the shaft or other secure location.
5 Route the Ethernet cable to the installation location of the network switch or to the back of the chartplotter.
   NOTE: The cable should not be routed close to electrical wires or other sources of electrical interference.
6 Route the power cable to a 12 Vdc power source.
7 Adjust the mount so it points toward the front of the boat at an angle based on the transducer angle considerations.

Attaching the Transducer to a Trolling Motor

1 Insert the hose clamps ① through the slots on the trolling motor mount ②.
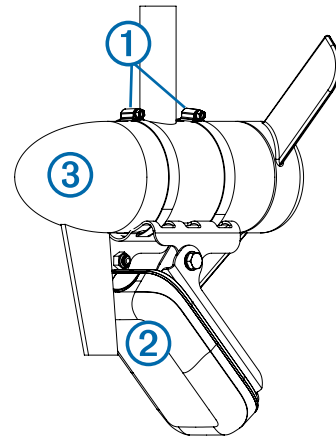
2 Slide the hose clamps around the trolling motor ③.
3 With the motor placed as close to the center line of rotation as possible, tighten the hose clamps.
4 Secure the transducer cable to the motor shaft or other secure location.
   NOTE: Ensure the trolling motor and transducer clear the boat during deployment and retraction.
5 Route the Ethernet cable to the installation location of the network switch or to the back of the MFD while taking these precautions:
   - The cable should not be routed close to electrical wires or other sources of electrical interference.
   - The cable must not be pinched when the trolling motor is deployed and retracted.
   - Cutting the cables is not recommended, but a field installation kit can be purchased from Garmin or a Garmin dealer if cutting the cables is necessary.
6 Add cable wraps to secure the cable, and provide a circular service loop to allow the trolling motor to rotate.
7 Route the power cable to a 12 Vdc power source.
8 For a downward-facing transducer, adjust the mount so the transducer points straight down.
9 For a forward-facing transducer, adjust the mount so the transducer points toward the front of the boat at an angle based on the transducer mounting angle considerations.

Specifications

Specification	Measurement
Dimensions (W x H x L)	9.1 x 4.2 x 17 cm (3.6 x 1.7 x 6.7 in.)
Weight	800 g (1.8 lb.)
Max. power usage	10 W
Temperature range	• Operating: From 0 to 40°C (from 32 to 104°F) • Storage: From -40 to 70°C (from -40 to 158°F).
Material	ASA plastic
Maximum depth*	91 m (300 ft.)
Frequency	417 kHz

* Dependent upon transducer placement, water salinity, bottom type, and other water conditions.

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Panoptix™ PS60

Installation Instructions

Important Safety Information

⚠ WARNING

See the *Important Safety and Product Information* guide in the chartplotter or fishfinder product box for product warnings and other important information.

The device must be installed with at least one of the included anti-rotation bolts. Failure to do so could result in the device rotating while the boat is moving and could cause damage to your vessel.

You are responsible for the safe and prudent operation of your vessel. Sonar is a tool that enhances your awareness of the water beneath your boat. It does not relieve you of the responsibility of observing the water around your boat as you navigate.

⚠ CAUTION

Failure to install and maintain this equipment in accordance with these instructions could result in damage or injury.

Always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding.

NOTICE

When drilling or cutting, always check what is on the opposite side of the surface.

This equipment should be installed by a qualified marine installer.

To obtain the best performance and to avoid damage to your boat, you must install the Garmin® transducer according to these instructions.

Read all installation instructions before proceeding with the installation. If you experience difficulty during the installation, contact Garmin Product Support.

Software Update

You may need to update the device software when you install the device or add an accessory to the device.

Loading the New Software on a Memory Card

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1 Insert a memory card into the card slot on the computer.
2 Go to garmin.com/support/software/marine.html.
3 Select **Download** next to the software bundle that corresponds with your device.
4 Read and agree to the terms.
5 Select **Download**.

6 If necessary, select **Run**.
7 If necessary, select the drive associated with the memory card, and select **Next** > **Finish**.

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• In the UK, call 0808 238 0000.
• In Europe, call +44 (0) 870 850 1241.

Tools Needed

• Drill
• 3 mm bit ($^1/_8$ in.)
• 14 mm bit ($^9/_{16}$ in.) (fiberglass hull)
• 19 mm bit ($^3/_4$ in.) (metal hull)
• 32 mm spade bit (1 $^1/_4$ in.) (fiberglass hull)
• 38 mm hole saw (1 $^1/_2$ in.) (metal hull)
• Bandsaw
• Crescent wrench
• Masking tape
• Marine sealant
• Epoxy or exposed core sealant (cored fiberglass hull)

Mounting Location Considerations
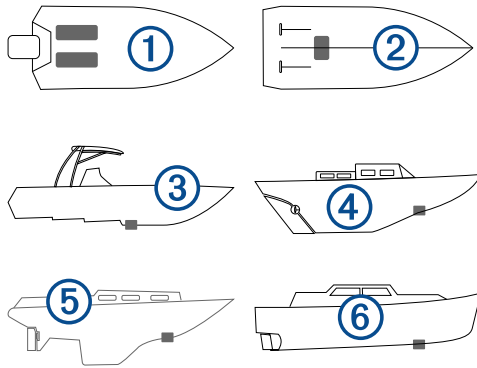
- On outboard and sterndrive vessels ①, the transducer should be mounted in front of and close to the engine or engines.
- On inboard vessels ②, the transducer should be mounted in front of and far away from the engine propeller and shaft.
- On step-hull vessels ③, the transducer should be mounted in front of the first step.
- On full-keel vessels ④, the transducer should be mounted at a slight angle that aims at the bow, not parallel to the centerline.
- On fin-keel vessels ⑤, the transducer should be mounted from 25 to 75 cm (from 10 to 30 in.) in front of the keel and a maximum of 10 cm (4 in.) to the side of the centerline.
- On vessels with displacement hulls ⑥, the transducer should be mounted approximately $1/3$ aft of the waterline length of the vessel from the bow, and from 150 to 300 mm (from 6 to 12 in.) to the side of the centerline.
- The transducer should not be mounted behind strakes, struts, fittings, water intake or discharge ports, or anything that creates air bubbles or causes the water to become turbulent.

  The transducer must be in clean (non-turbulent) water for optimal performance.
- The transducer should not be mounted in a location where it might be jarred when launching, hauling, or storing.
- On single-drive boats, the transducer must not be mounted in the path of the propeller.

  The transducer can cause cavitation that can degrade the performance of the boat and damage the propeller.
- On twin-drive boats, the transducer should be mounted between the drives, if possible.
- The potting window of the transducer must face the starboard side of the vessel to display default left and right views on a chartplotter. When the potting window faces the port side of the vessel, you must change the chartplotter software settings to display a flipped image.

Fairing Block

The fairing block positions your transducer parallel to the water line for increased sonar accuracy. You must measure the deadrise angle of your boat hull to mount the transducer at the correct angle.

Deadrise Angle

Deadrise is the angle formed between a horizontal line and a boat hull at a single point. You can measure the deadrise angle with an angle finder, a protractor, or a digital level. You can also ask your boat manufacturer for the deadrise angle of the specific point on your boat hull.

NOTE: A boat may have several deadrise angles depending on the shape of the hull. Measure the deadrise angle only at the location where you plan to install the transducer.

Cutting the Fairing Block

> ⚠ **CAUTION**
>
> Always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding.

1 Using wood screws, attach the fairing block to a piece of wood.

   The wood becomes a cutting guide for the fairing block.
2 Measure the deadrise angle of the hull at the mounting location.
3 Tilt your band saw table to match the deadrise angle and secure the cutting fence.
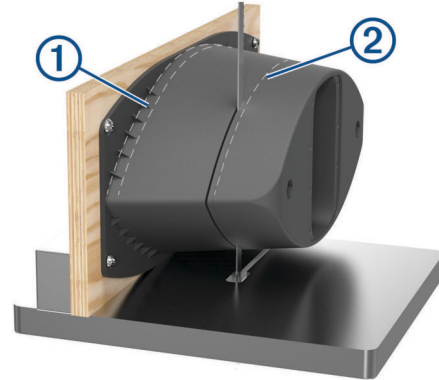
4 Position the fairing block on the table so the cutting guide rests against the fence and the angle matches the angle of the mounting location.
5 Adjust the cutting fence to ensure the fairing block has a minimum thickness of 13 mm ($1/2$ in.) from the top edge ①, and 61 mm (2.4 in.) from the bottom edge ②.

   NOTE: The maximum cutting angle of the fairing block is 25 degrees.
6 Cut the fairing block.
7 Using a rasp or power tool, shape the fairing block to the hull as precisely as possible.
8 Use the remaining section of the fairing block as the backing block inside the hull.

Cored Fiberglass Boat Hull Installation Instructions
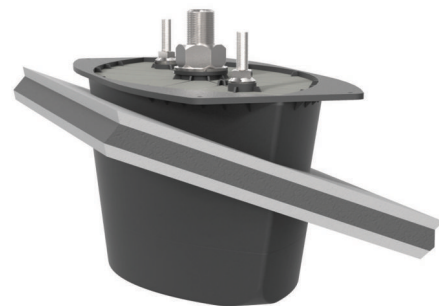
Drilling the Transducer Stem Hole and the Anti-Rotation Bolt Holes in a Cored Fiberglass Hull

> ⚠ **WARNING**
>
> The device must be installed with at least one of the included anti-rotation bolts. Failure to do so could result in the device rotating while the boat is moving and could cause damage to your vessel.

Before you can drill holes for the anti-rotation bolts, you must cut the fairing block (*Cutting the Fairing Block*, page 2).

The core must be cut and sealed carefully to protect against water seepage.

1 Select a mounting location without surface irregularities or obstructions.
2 Using the template, mark the location of the stem hole and anti-rotation bolts.
3 Drill a 3 mm ($^1/_8$ in.) pilot hole through the template and hull at the stem hole location.

   The hole must be perpendicular to the water surface.
4 Place masking tape over the pilot hole and surrounding area outside the hull to prevent damage to the fiberglass.
5 Using a 32 mm (1 $^1/_4$ in.) bit at the stem hole location, drill from outside the hull through the outer skin ①, inner skin ②, and core ③.
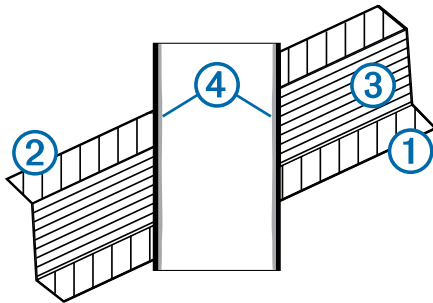
   The hole must be perpendicular to the water surface.
6 Sand and clean the inner skin, core, and outer skin around the hole.
7 Seal the exposed inner core with epoxy ④, and allow the epoxy to set thoroughly.
8 While holding a drill with a 14 mm ($^9/_{16}$ in.) bit plumb, drill the anti-rotation bolt holes through the hull from outside the hull.

   The holes must be perpendicular to the water surface.
9 Sand and clean the area around the holes.
10 Seal the anti-rotation bolt holes with epoxy and allow the epoxy to set thoroughly.

Applying Marine Sealant to a Thru-Hull Transducer
You must apply marine sealant to the water path to ensure a tight, waterproof seal between the fairing block, transducer, and hull.

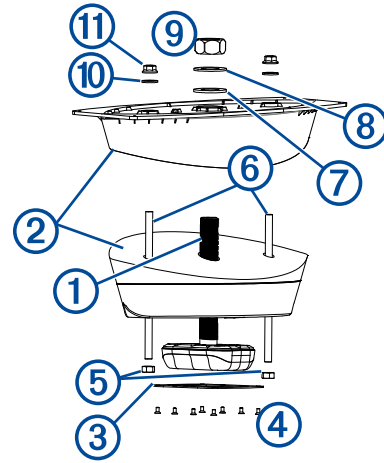   Apply marine sealant between these components.
   • Fairing block and hull
   • Fairing block and transducer
   • Stem and hull nut
   • Anti-rotation bolts and holes
   • Bushings, stem, and hull (if necessary)

Installing the Transducer in a Fiberglass Hull
It is recommended that two installers complete these instructions, with one positioned outside the boat and one inside the boat.

NOTE: When installing the transducer in a cored fiberglass hull, avoid over-tightening the nuts to prevent damage to the hull.

1 From outside the hull, insert the transducer cable stem ① through the bottom half of the cut fairing block ②.

2 Secure the cover plate ③ to the bottom of the fairing block with the screws ④.
3 Secure the M12 nuts ⑤ to the bottom of the anti-rotation bolts ⑥ until no more than two threads are exposed between the M12 nut and the bottom of the fairing block.
4 Insert the anti-rotation bolts into the bottom half of the cut fairing block.
5 Apply marine sealant to the surface of the bottom half of the fairing block that must contact the hull.
6 Pull the transducer cable, transducer stem, and anti-rotation bolts through the mounting hole.
7 Place the bottom half of the fairing block firmly against the outside hull.

   The fairing block and transducer must be parallel to the keel.
8 From inside the hull, apply marine sealant to the surface of the top half of the fairing block that must contact the hull.
9 Apply the included anti-seize compound to the exposed transducer stem and anti-rotation bolts.
10 Pull the transducer cable, transducer stem, and anti-rotation bolts through the top half of the fairing block.
11 Place the top half of the fairing block firmly against the inside hull.
12 Use a crescent wrench to secure the transducer stem with the included rubber 31 mm washer ⑦, nylon 31 mm washer ⑧, and 40 mm hull nut ⑨.

   NOTE: Do not over-tighten the hull nut.
13 Use a crescent wrench to secure the top half of the fairing block to the anti-rotation bolts with the included 13.4 mm washers ⑩ and M12 nuts ⑪.

   NOTE: Do not over-tighten the M12 nuts.
14 Apply sealant between the transducer sensor and the cover plate, and in the holes around the stem and anti-rotation bolts.
15 Before the sealant hardens, remove all excess sealant on the outside of the fairing block and exterior hull to ensure smooth water flow over the transducer.

Installing Ferrite Beads on the Cables
You must install all three included ferrite beads around the power and network cables to comply with EMC standards. If you do not install the ferrite beads, you may be in violation of national EMC standards and other laws.

   Securely snap each of the three ferrite beads around both the power and Garmin Marine Network cables, as close to the transducer stem as possible.

Non-cored Fiberglass Boat Hull Installation Instructions
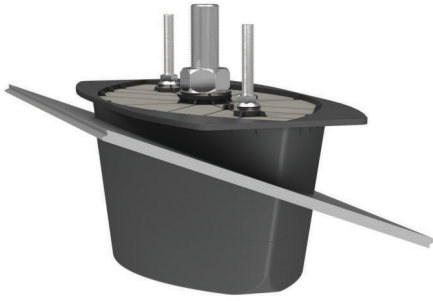
Drilling the Transducer Stem Hole and the Anti-Rotation Bolt Holes in a Fiberglass or Non-Cored Hull

> ⚠ **WARNING**
>
> The device must be installed with at least one of the included anti-rotation bolts. Failure to do so could result in the device rotating while the boat is moving and could cause damage to your vessel.

Before you can drill holes for the anti-rotation bolts, you must cut the fairing block (*Cutting the Fairing Block*, page 2).

1 Select a mounting location without surface irregularities or obstructions.
2 Using the template, mark the location of the stem hole and anti-rotation bolts.
3 From outside the hull, drill a 3 mm ($^1/_8$ in.) pilot hole at the stem hole location.

  The hole must be perpendicular to the water surface.
4 If the vessel has a fiberglass hull, place masking tape over the pilot hole and surrounding area outside the hull to reduce cracking of the gel coat.
5 If you taped over the pilot hole, use a utility knife to cut out the hole in the tape.
6 While holding a drill with a 32 mm ($1^1/_4$ in.) spade bit plumb, cut a hole at the stem hole location, from outside the hull.

  The hole must be perpendicular to the water surface.
7 Sand and clean the area around the hole.
8 While holding a drill with a 14 mm ($^9/_{16}$ in.) bit plumb, drill the anti-rotation bolt holes through the hull.

  The holes must be perpendicular to the water surface.
9 Sand and clean the area around the holes.

Applying Marine Sealant to a Thru-Hull Transducer

You must apply marine sealant to the water path to ensure a tight, waterproof seal between the fairing block, transducer, and hull.

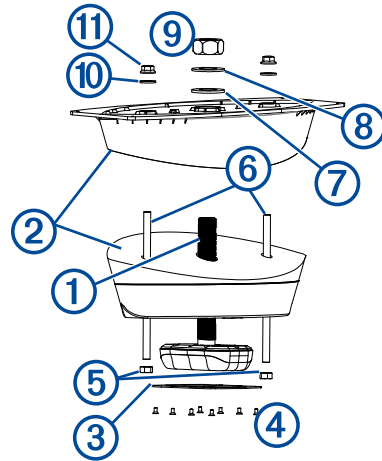 Apply marine sealant between these components.
  - Fairing block and hull
  - Fairing block and transducer
  - Stem and hull nut
  - Anti-rotation bolts and holes
  - Bushings, stem, and hull (if necessary)

Installing the Transducer in a Fiberglass Hull

It is recommended that two installers complete these instructions, with one positioned outside the boat and one inside the boat.

NOTE: When installing the transducer in a cored fiberglass hull, avoid over-tightening the nuts to prevent damage to the hull.

1 From outside the hull, insert the transducer cable stem ① through the bottom half of the cut fairing block ②.

2 Secure the cover plate ③ to the bottom of the fairing block with the screws ④.
3 Secure the M12 nuts ⑤ to the bottom of the anti-rotation bolts ⑥ until no more than two threads are exposed between the M12 nut and the bottom of the fairing block.
4 Insert the anti-rotation bolts into the bottom half of the cut fairing block.
5 Apply marine sealant to the surface of the bottom half of the fairing block that must contact the hull.
6 Pull the transducer cable, transducer stem, and anti-rotation bolts through the mounting hole.
7 Place the bottom half of the fairing block firmly against the outside hull.

  The fairing block and transducer must be parallel to the keel.
8 From inside the hull, apply marine sealant to the surface of the top half of the fairing block that must contact the hull.
9 Apply the included anti-seize compound to the exposed transducer stem and anti-rotation bolts.
10 Pull the transducer cable, transducer stem, and anti-rotation bolts through the top half of the fairing block.
11 Place the top half of the fairing block firmly against the inside hull.
12 Use a crescent wrench to secure the transducer stem with the included rubber 31 mm washer ⑦, nylon 31 mm washer ⑧, and 40 mm hull nut ⑨.

  NOTE: Do not over-tighten the hull nut.
13 Use a crescent wrench to secure the top half of the fairing block to the anti-rotation bolts with the included 13.4 mm washers ⑩ and M12 nuts ⑪.

  NOTE: Do not over-tighten the M12 nuts.
14 Apply sealant between the transducer sensor and the cover plate, and in the holes around the stem and anti-rotation bolts.
15 Before the sealant hardens, remove all excess sealant on the outside of the fairing block and exterior hull to ensure smooth water flow over the transducer.

Installing Ferrite Beads on the Cables

You must install all three included ferrite beads around the power and network cables to comply with EMC standards. If you do not install the ferrite beads, you may be in violation of national EMC standards and other laws.

  Securely snap each of the three ferrite beads around both the power and Garmin Marine Network cables, as close to the transducer stem as possible.

Metal Boat Hull Installation Instructions
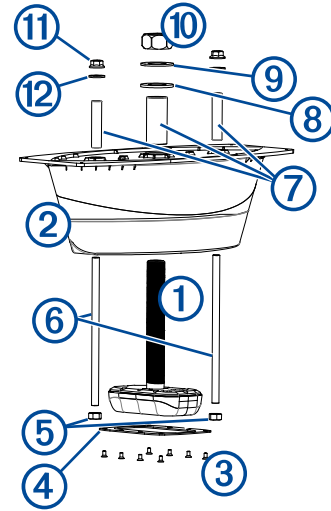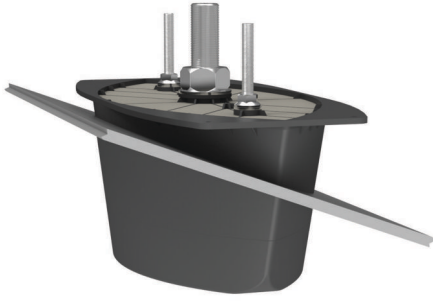
Drilling the Transducer Stem Hole and the Anti-Rotation Bolt Holes in a Metal Hull

Before you can drill holes for the anti-rotation bolts, you must cut the fairing block (*Cutting the Fairing Block*, page 2).

You should follow these instructions when you are mounting the transducer on a boat that has a metal hull.

1 Select a mounting location without surface irregularities or obstructions.
2 Using the template, mark the location of the stem hole and anti-rotation bolts.
3 From outside the hull, drill a 3 mm ($^1/_8$ in.) pilot hole through the hull at the stem hole locationl.

   The hole must be perpendicular to the water surface.
4 Using a 38 mm ($1^1/_2$ in.) hole saw, cut the stem hole from outside the hull.

   The hole must be perpendicular to the water surface.
5 While holding a drill with a 19 mm ($^3/_4$ in.) bit plumb, drill the anti-rotation bolt holes through the hull from outside the hull.
6 Sand and clean the area around the holes.

Applying Marine Sealant to a Thru-Hull Transducer

You must apply marine sealant to the water path to ensure a tight, waterproof seal between the fairing block, transducer, and hull.

   Apply marine sealant between these components.
   • Fairing block and hull
   • Fairing block and transducer
   • Stem and hull nut
   • Anti-rotation bolts and holes
   • Bushings, stem, and hull (if necessary)

Installing the Transducer on a Metal Hull

It is recommended that two installers complete these instructions, with one positioned outside the boat and one inside the boat.

1 Insert the transducer cable stem ① through the bottom half of the cut fairing block ②.

2 Secure the cover plate ③ to the bottom of the fairing block with the screws ④.
3 Secure the M12 nuts ⑤ to the bottom of the anti-rotation bolts ⑥ until no more than two threads are exposed between the M12 nut and the bottom of the fairing block.
4 Insert the anti-rotation bolts into the bottom half of the cut fairing block.
5 Place the bushings ⑦ on the anti-rotation bolts and transducer stem.
6 Apply marine sealant to the surface of the bottom half of the fairing block that must contact the hull.
7 From outside the hull, place the bottom half of the fairing block firmly against the outside hull.

   The fairing block and transducer must be parallel to the keel.
8 Pull the transducer cable, transducer stem, and anti-rotation bolts through the mounting hole.
9 Apply marine sealant to the surface of the top half of the fairing block that must contact the hull.
10 Pull the transducer cable, transducer stem, and anti-rotation bolts through the top half of the fairing block.
11 Place the top half of the fairing block firmly against the inside hull.
12 Apply the included anti-seize compound to the exposed transducer stem, bushings, and anti-rotation bolts.
13 Use a crescent wrench to secure the transducer stem with the included rubber 31 mm washer ⑧, nylon 31 mm washer ⑨, and 40 mm hull nut ⑩.

   NOTE: Do not over-tighten the hull nut.
14 Use a crescent wrench to secure the top half of the fairing block to the anti-rotation bolts with the included 13.4 mm washers ⑪ and M12 nuts ⑫.

   NOTE: Do not over-tighten the M12 nuts.
15 Apply sealant between the transducer sensor and the cover plate, and in the holes around the stem and anti-rotation bolts.
16 Before the sealant hardens, remove all excess sealant on the outside of the fairing block and exterior hull to ensure smooth water flow over the transducer.

Installing Ferrite Beads on the Cables

You must install all three included ferrite beads around the power and network cables to comply with EMC standards. If you do not install the ferrite beads, you may be in violation of national EMC standards and other laws.

   Securely snap each of the three ferrite beads around both the power and Garmin Marine Network cables, as close to the transducer stem as possible.

Maintenance

Testing the Installation

NOTICE

You should check your boat for leaks before you leave it in the water for an extended period of time.

Because water is necessary to carry the sonar signal, the transducer must be in the water to work properly. You cannot get a depth or distance reading when out of the water. When you place your boat in the water, check for leaks around any screw holes that were added below the water line.

Anti-Fouling Paint

To prevent corrosion on metal hulls and to slow the growth of organisms that can affect a vessel's performance and durability, you should apply a water-based anti-fouling paint to the hull of your vessel every six months.

NOTE: Never apply ketone-based anti-fouling paint to your vessel, because ketones attack many types of plastic and could damage or destroy your transducer.

Cleaning the Transducer

Aquatic fouling accumulates quickly and can reduce your device's performance.

1 Remove the fouling with a soft cloth and mild detergent.
2 If the fouling is severe, use a scouring pad or putty knife to remove growth.
3 Wipe the device dry.

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