

GARMIN®

THRU-HULL TRANSDUCER

INSTALLATION INSTRUCTIONS

Important Safety Information

WARNING

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

The device must be installed with one or more anti-rotation bolts (included). 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.

To avoid possible personal 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 avoid damaging the vessel.

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.

To prevent interference, do not install the transducer near the engine or in the engine room.

To prevent damage to the cable and the transducer, do not use the cable to pick up or pull the transducer.

Software Update

You must update the Garmin chartplotter software when you install this device. For instructions on updating the software, see your chartplotter owner's manual at support.garmin.com.



Tools Needed

- Drill
- 3 mm ($\frac{1}{8}$ in.) drill bit
- 13 mm ($\frac{1}{2}$ in.) end wrench or adjustable wrench
- Adjustable wrench suitable for nuts up to 38 mm ($1\frac{1}{2}$ in.)
- Marine sealant (flexible, fast-cure type, for below the waterline)
- Mild household detergent or rubbing alcohol
- Sandpaper
- Masking tape
- Waterproof electrical tape
- Grommets (optional)
- Water-based anti-fouling paint (optional)

These additional items are needed depending on the installation.

For mounting in a fiberglass hull:

- 9 mm ($\frac{3}{8}$ in.) drill bit
- 25 mm (1 in.) spade bit or hole saw
- Marine grade epoxy resin for fiberglass (cored fiberglass hulls)

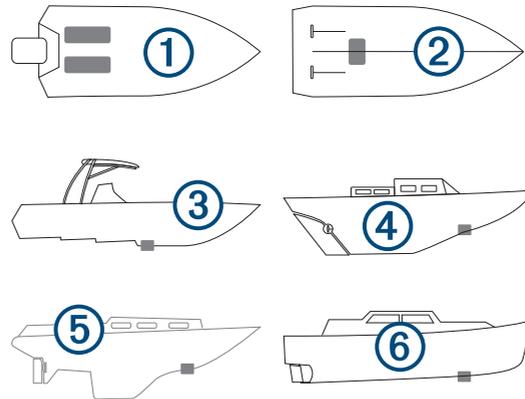
For mounting in a metal hull:

- File
- 13 mm ($\frac{1}{2}$ in.) drill bit
- 32 mm ($1\frac{1}{4}$ in.) hole saw

For installations using a fairing block:

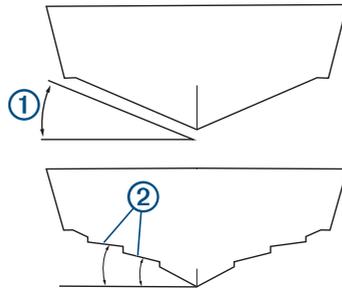
- Bandsaw or table saw
- Rasp

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, parallel to the centerline.
- On fin-keel vessels ⑤, the transducer should be mounted from 25 cm 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 $\frac{1}{3}$ 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 be mounted parallel to the bow-stern axis of your vessel.
- 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.

Deadrise Angle



The deadrise angle ① is the measurement of the angle between a horizontal line and the outer hull at a single point.

The deadrise angle is an important factor in choosing a transducer type, transducer placement, and whether to use fairing blocks (*Fairing Block Angle Cut*, page 4).

You can measure the deadrise angle with a smartphone application, an angle finder, a protractor, or a digital level. You can also ask your boat manufacturer for the deadrise of a specific point on your boat hull.

NOTE: Your vessel's hull may have several deadrise angles ② depending on the hull shape. You should measure the deadrise angle at the installation location.

Fairing Block Angle Cut

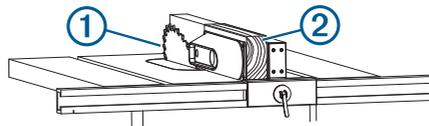
A fairing block positions your transducer parallel to the water line for increased sonar accuracy. You must measure the deadrise angle of your boat hull to determine if a fairing block is necessary to mount the transducer. If the deadrise angle of your mounting location exceeds 5°, you should use a fairing block to mount the transducer.

Cutting the Fairing Block

⚠ CAUTION

To avoid possible personal injury, 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 table saw blade ① to match the deadrise angle and secure the cutting fence.

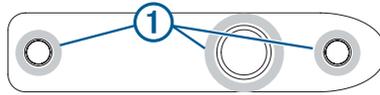


- 4 Position the fairing block on the table so the cutting guide rests against the fence ② and the angle matches the angle of the mounting location.
- 5 Adjust the cutting fence to ensure the fairing block has a minimum thickness of 13 mm (1/2 in.).
NOTE: The maximum cutting angle of the fairing block is 25°.
- 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.

Applying Marine Sealant to a Thru-Hull Transducer

You must apply marine sealant to the transducer to ensure a tight, waterproof seal between the fairing block and the hull. Do not apply sealant directly to the stem or anti-rotation bolts.

Apply marine sealant ① around the base of the stem and anti-rotation bolts on the transducer.



Preparing the Hull

Preparing a Cored Fiberglass Hull

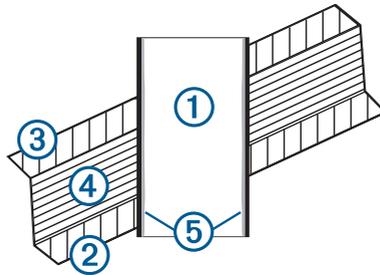
⚠ WARNING

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

Before you drill holes in the hull, you should cut the fairing block (*Cutting the Fairing Block, page 4*).

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 locations of the stem hole and anti-rotation bolt holes.
The arrow(s) indicating the front of the device must point to the front of the vessel.
- 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 Place masking tape over the pilot hole and surrounding area outside the hull to reduce cracking of the gel coat.
- 5 From outside the hull, use a 25 mm (1 in.) spade bit or hole saw to cut the stem hole ① through the outer skin ②, inner skin ③, and the core ④.



The hole must be perpendicular to the water surface.

TIP: Running the hole saw in reverse helps to prevent damage to the fiberglass gel coat.

- 6 Remove the plug of core material from the hole.
- 7 Sand and clean the inner skin, core, and outer skin around the hole.
- 8 Test fit the transducer to verify the marked locations of the anti-rotation bolt holes.
If the marked locations do not align with the anti-rotation bolt holes on the transducer, mark the new locations.
- 9 From outside the hull, use a 9 mm ($3/8$ in.) drill bit to drill the anti-rotation bolt holes.
The holes must be perpendicular to the water surface.
- 10 Sand and clean the area around the holes to remove dust particles.
- 11 Seal the exposed inner core with marine grade fiberglass epoxy resin ⑤ and allow it to cure before securing the transducer in the hull.

Preparing a Non-Cored Fiberglass Hull

WARNING

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

Before you drill holes in the hull, you should cut the fairing block (*Cutting the Fairing Block, page 4*).

- 1 Select a mounting location without surface irregularities or obstructions.
- 2 Using the template, mark the locations of the stem hole and anti-rotation bolt holes.
The arrow(s) indicating the front of the device must point to the front of the vessel.
- 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 Place masking tape over the pilot hole and surrounding area outside the hull to reduce cracking of the gel coat.
- 5 Use a utility knife to cut a hole in the tape over the pilot hole.
- 6 From outside the hull, use a 25 mm (1 in.) spade bit or hole saw to cut the stem hole.
The hole must be perpendicular to the water surface.
- 7 Test fit the transducer and verify the marked locations of the anti-rotation bolt holes.
If the marked locations do not align with the anti-rotation bolt holes on the transducer, mark the new locations.
- 8 From outside the hull, use a 9 mm ($3/8$ in.) drill bit to drill the anti-rotation bolt holes.
The holes must be perpendicular to the water surface.
- 9 Sand and clean the area around the holes.

Preparing a Metal Hull

WARNING

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

Before you drill holes in the hull, you should cut the fairing block (*Cutting the Fairing Block, page 4*).

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

- 1 Select a mounting location without surface irregularities or obstructions.
- 2 Using the template, mark the locations of the stem hole and anti-rotation bolt holes.
The arrow(s) indicating the front of the device must point to the front of the vessel.
- 3 From outside the hull, drill a 3 mm ($1/8$ in.) pilot hole through the hull at the stem hole location.
The hole must be perpendicular to the water surface.
- 4 From outside the hull, use a 32 mm ($1\ 1/4$ in.) hole saw to cut the stem hole.
The hole must be perpendicular to the water surface.
- 5 Test fit the transducer and verify the marked locations of the anti-rotation bolt holes.
If the marked locations do not align with the anti-rotation bolt holes on the transducer, mark the new locations.
- 6 From outside the hull, use a 13 mm ($1/2$ in.) drill bit to drill the anti-rotation bolt holes.
The holes must be perpendicular to the water surface.
- 7 Sand and clean the area around the holes.

Securing the Transducer in the Hull

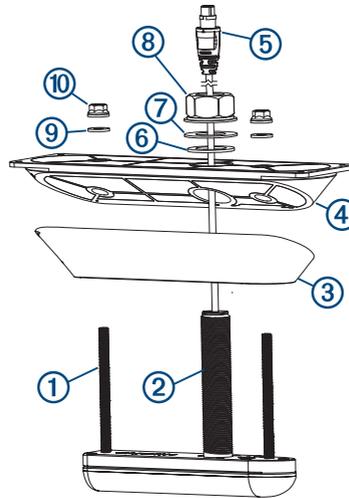
Fiberglass Hull Installation

Installing the Transducer in a Fiberglass Hull Using a Fairing Block

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 damaging the hull.

- 1 Screw the anti-rotation bolts ① into the anti-rotation bolt recesses on the transducer.



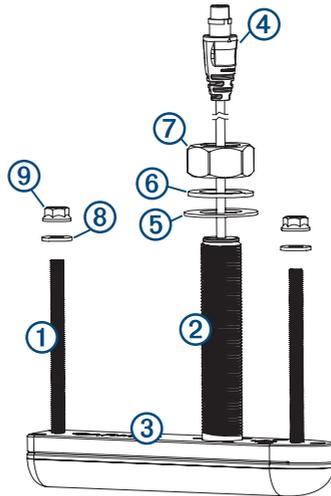
- 2 Apply marine sealant at the base of the anti-rotation bolts and transducer stem ②.
- 3 Seat the transducer housing firmly in the lower half of the fairing block ③.
- 4 Apply marine sealant to the side of the lower half of the fairing block that contacts the outside of the hull.
- 5 Apply marine sealant to the side of the backing block ④ that contacts the inside of the hull.
- 6 From outside the hull, insert the transducer cable ⑤ and transducer stem through the center mounting hole, and the anti-rotation bolts through the outer holes until the fairing block is in contact with the hull.
- 7 From inside the hull, slide the backing block onto the transducer stem and anti-rotation bolts until it is in contact with the inside of the hull.
The fairing and transducer must be parallel to the keel.
- 8 From inside the hull, apply the included anti-seize compound to the exposed transducer stem and anti-rotation bolts.
- 9 From inside the hull, use an adjustable wrench to secure the backing block to the transducer stem using the included rubber 24 mm washer ⑥, nylon 26 mm washer ⑦, and 35 mm hull nut ⑧.
Do not over-tighten the hull nut.
- 10 From inside the hull, use a 13 mm ($1/2$ in.) end wrench or adjustable wrench to secure the backing block to the anti-rotation bolts using the included 8 mm washers ⑨ and M8 nuts ⑩.
Do not over-tighten the M8 nuts.
- 11 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 the Transducer in a Fiberglass Hull without a Fairing Block

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

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

- 1 Screw the anti-rotation bolts ① into the anti-rotation bolt recesses on the transducer.



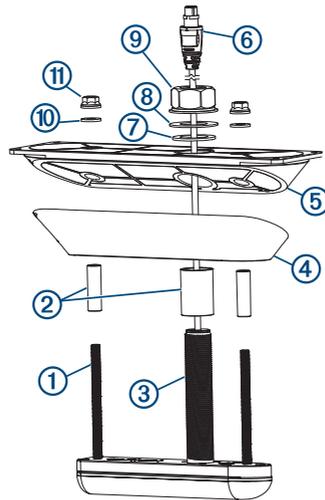
- 2 Apply marine sealant to the base of the anti-rotation bolts and transducer stem ②, and to the side of the transducer ③ that contacts the hull.
- 3 From outside the hull, insert the transducer cable ④ and transducer stem through the center mounting hole, and the anti-rotation bolts through the outer holes until the transducer is in contact with the hull.
- 4 From inside the hull, apply the included anti-seize compound to the exposed transducer stem and anti-rotation bolts.
- 5 From inside the hull, use an adjustable wrench to secure the included 24 mm rubber washer ⑤, 26 mm nylon washer ⑥, and 35 mm hull nut ⑦ to the transducer stem.
Do not over-tighten the hull nut.
- 6 From inside the hull, use a 13 mm ($1/2$ in.) end wrench or adjustable wrench to secure the included 8 mm nylon washers ⑧ and M8 nuts ⑨ to the anti-rotation bolts.
Do not over-tighten the M8 nuts.
- 7 Before the sealant hardens, remove all excess sealant on the outside of the exterior hull to ensure smooth water flow over the transducer.

Metal Hull Installation

Installing the Transducer in a Metal Hull Using a Fairing Block

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

- 1 Screw the anti-rotation bolts ① into the anti-rotation bolt recesses on the transducer.



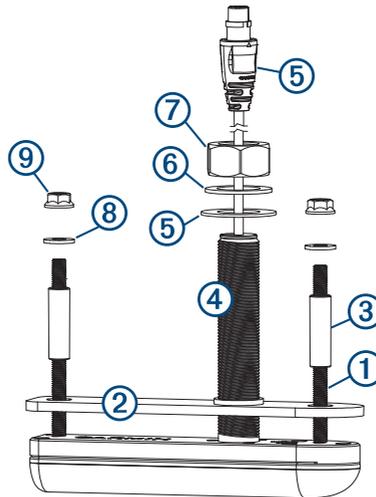
- 2 Place the bushings ② on the anti-rotation bolts and transducer stem ③.
- 3 Apply marine sealant to the bushings, and at the base of the anti-rotation bolts and transducer stem.
- 4 Seat the transducer housing firmly in the lower half of the fairing block ④.
- 5 Apply marine sealant to the side of the lower half of the fairing block that contacts the outside of the hull.
- 6 Apply marine sealant to the side of the backing block ⑤ that contacts the inside of the hull.
- 7 From outside the hull, insert the transducer cable ⑥ and transducer stem through the center mounting hole, and the anti-rotation bolts through the outer holes until the fairing block is in contact with the hull.
- 8 From inside the hull, slide the backing block onto the transducer stem and anti-rotation bolts until it is in contact with the inside of the hull.
The fairing and transducer must be parallel to the keel.
- 9 From inside the hull, apply the included anti-seize compound to the exposed transducer stem and anti-rotation bolts.
- 10 From inside the hull, use an adjustable wrench to secure the backing block to the transducer stem using the included rubber 24 mm washer ⑦, nylon 26 mm washer ⑧ 35 mm, and hull nut ⑨.
- 11 From inside the hull, use a 13 mm ($1/2$ in.) end wrench or adjustable wrench to secure the backing block to the anti-rotation bolts using the included 8 mm washers ⑩ and M8 nuts ⑪.
- 12 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 the Transducer in a Metal Hull without a Fairing Block

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

NOTE: When installing a transducer in an aluminum or steel hull, you must use the included isolation plate.

- 1 Screw the anti-rotation bolts ① into the anti-rotation bolt recesses on the transducer.



- 2 Seat the isolation plate ② firmly against the transducer.
- 3 Place the bushings ③ on the anti-rotation bolts.
- 4 Apply marine sealant to the base of the transducer stem ④ and anti-rotation bolts, and the side of the isolation plate that contacts the outside of the hull.
NOTE: Apply enough marine sealant on all surfaces to ensure bonding between the plate and the hull, including a tight perimeter seal.
- 5 From outside the hull, insert the transducer through the mounting hole and seat it firmly against the hull.
- 6 From inside the hull, apply the included anti-seize compound to the exposed transducer stem and anti-rotation bolts.
- 7 From inside the hull, use an adjustable wrench to secure the included 24 mm rubber washer ⑤, 26 mm nylon washer ⑥, and 35 mm hull nut ⑦, to the transducer stem.
- 8 From inside the hull, use a 13 mm ($1/2$ in.) end wrench or adjustable wrench to secure the included 8 mm nylon washers ⑧ and M8 nuts ⑨ to the anti-rotation bolts.
- 9 Before the sealant hardens, remove all excess sealant on the outside of the exterior hull to ensure smooth water flow over the transducer.

Routing and Connecting the Transducer Cable

NOTICE

To prevent damage to the cable and the transducer, do not use the cable to pick up or pull the transducer.

You must not cut or splice the transducer cable. Cutting the transducer cable voids your warranty.

If the transducer cable is not long enough to reach the chartplotter or sonar black box, you can purchase an extension cable from your Garmin dealer or buy.garmin.com.

- 1 Route and connect the transducer cable to the chartplotter or sonar black box while taking these precautions.
 - Route the cable away from other wiring and the engine(s) to prevent possible interference with the sonar signal.
 - Route the cable so it is not pinched by other equipment.
 - Use grommets to protect the cable if it passes through the bulkhead or other parts of the boat.
 - Use zip ties or other suitable fastening equipment to secure the cable where necessary to protect it from damage.
- 2 Connect the transducer cable to the appropriate port on the chartplotter or sonar black box.
- 3 Tighten the locking ring on the cable connector to secure it.

Connecting a Pair of Transducers

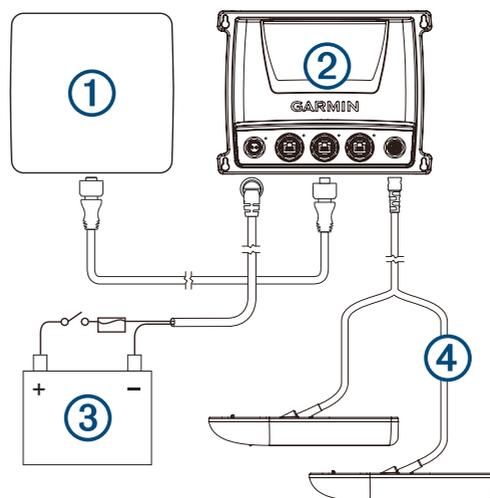
Before you connect a pair of transducers, you must complete all other installation instructions.

You can connect a pair of transducers to the sonar black box.

- 1 Connect each transducer cable to one of the split cable ends of the included Y-cable.
- 2 Connect the remaining Y-cable end connector to the appropriate port on your sonar black box.

Installation Diagram

You can use this diagram to identify the connection points from your transducers to the network, power, and sonar black box using the Y-cable.



Item	Description
①	Chartplotter
②	Sonar black box
③	Power source
④	Y-cable

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 of metal and to slow the growth of organisms that can affect a vessel's performance, you should apply a water-based anti-fouling paint to the transducer 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.

© 2015 Garmin Ltd. or its subsidiaries

Garmin® and the Garmin logo are trademarks of Garmin Ltd. or its subsidiaries, registered in the USA and other countries. These trademarks may not be used without the express permission of Garmin.