

GARMIN®

FORCE® TROLLING MOTOR BUSHING REPLACEMENT SERVICE INSTRUCTIONS

Getting Started

⚠ WARNING

Always disconnect the trolling motor from the battery before performing any service.

Do not run the motor when the propeller is out of the water. Contact with the rotating propeller may result in severe injury.

⚠ CAUTION

When stowing or deploying the motor, be aware of the risk of entrapment or pinching from moving parts, which can result in injury.

You should read these instructions completely before beginning this service, and make sure that you have the tools and skill set needed to complete it. If necessary, you should use a qualified marine installer to ensure proper service.

To aid with the installation, you can view a video of this process at www.garmin.com/videos/trolling_motor_bushings_kit.

Tools Needed

- #1 Phillips screwdriver
- #2 Phillips screwdriver
- $\frac{3}{32}$ in. hex bit or wrench
- 3 mm hex bit or wrench
- Two 4 mm hex bits or wrenches

Replacing the Bushings on the Trolling Motor

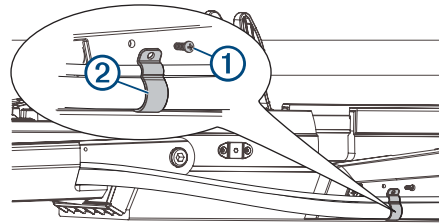
Follow these instructions to replace the bushings on your trolling motor using the best fit provided in the kit.

- 1 Disconnect the trolling motor from power.
- 2 Remove the power and transducer cables from the upper link of the mount (*Removing the Power and Transducer Cables From the Mount*, page 1).
- 3 Disconnect the lower gas spring (*Disconnecting the Lower Gas Spring*, page 1).
- 4 Disconnect the upper link of the mount (*Disconnecting the Upper Link of the Mount*, page 2).
- 5 Disconnect the upper gas spring (*Disconnecting the Upper Gas Spring*, page 2).
- 6 Disconnect the lower link of the mount (*Disconnecting the Lower Link of the Mount from the Steering Servo*, page 3).
- 7 Replace the bushings and reconnect the steering servo to the lower link of the mount (*Replacing the Bushings and Installing the Steering Servo on the Lower Link of the Mount*, page 3).
- 8 Secure the upper gas spring (*Securing the Upper Gas Spring*, page 4).
- 9 Replace the bushings and reconnect the steering servo to the upper link of the mount (*Replacing the Bushings and Connecting the Upper Link of the Mount to the Steering Servo Housing*, page 5).

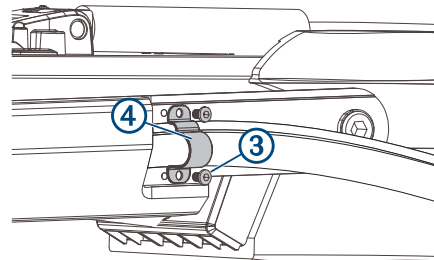
- 10 Connect the control panel to the steering servo (*Connecting the Motor to the Display Panel*, page 5).
- 11 Secure the lower gas spring (*Securing the Lower Gas Spring*, page 6).
- 12 Route the power and transducer cables through the mount (*Routing the Power and Transducer Cables Through the Mount*, page 6).
- 13 Connect the trolling motor to power.

Removing the Power and Transducer Cables From the Mount

- 1 Disconnect the motor from the power source.
- 2 Remove the power-cable plug, if necessary.
NOTE: If you installed the power-cable accessory plug sold by Garmin®, you should use a $\frac{3}{32}$ in. hex bit or wrench and a #1 Phillips screwdriver to remove it.
- 3 With the motor in the stowed position, using a #1 Phillips screwdriver, remove the single screw ① that secures the upper tab of the bracket ② to the mount base, and remove the bracket.



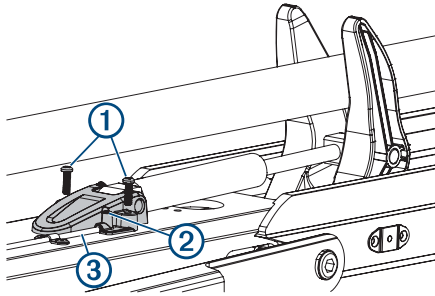
- 4 Using a 3 mm hex bit or wrench, remove the four screws ③ that secure the two brackets ④ to the mount on both sides of the cable channel.



- 5 Pull the power cable out of the channel along the side of the mount.
- 6 Pull the transducer cable out of the channel along the side of the mount.

Disconnecting the Lower Gas Spring

- 1 Place the trolling motor in the stowed position.
- 2 Using a #2 Phillips screwdriver, remove the screws ① that secure the lower gas spring clevis ② to the lower link of the mount.



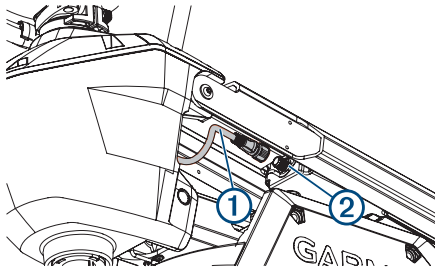
- 3 Lift the lower gas spring clevis off of the safety rod ③.

Disconnecting the Upper Link of the Mount

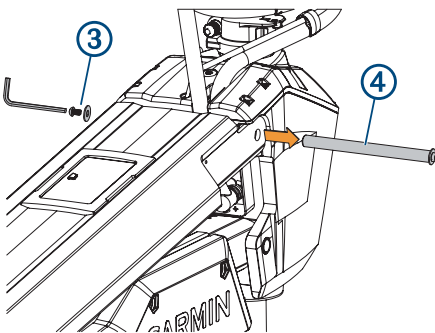
⚠ CAUTION

Because the lower gas spring is disconnected, you must take extreme care when moving the motor to the deployed position. The motor is heavy, and without the lower gas spring connected, it can fall with force when moving it to the deployed position, which can result in crushing or pinching injury.

- 1 Carefully move the motor to the deployed position.
- 2 Disconnect the cable ① from the display panel on the upper link of the mount ②.



- 3 Using two 4 mm hex bits or wrenches, remove the screw and washer ③ from one side of the upper pin ④ on the steering servo housing.



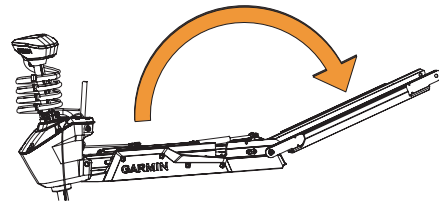
TIP: It is helpful to use the other 4 mm hex wrench to hold one end of the upper pin stationary while you remove the screw.

- 4 Remove the upper pin from the steering servo housing.

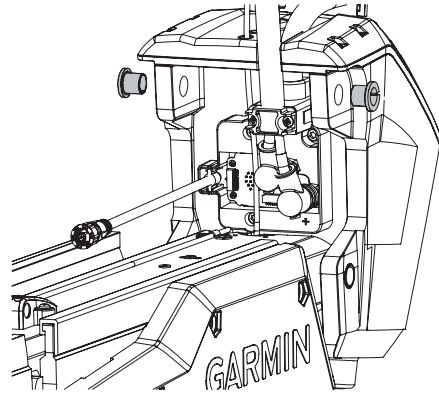
NOTICE

Take care when you remove the upper pin, because the motor swings freely on the lower pin and may damage the drive motor, propeller, or trailer.

- 5 Pivot the upper link away from the steering servo housing.



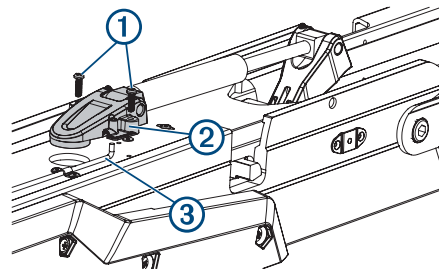
- 6 Remove the bushings from the upper holes in the steering servo housing.



Disconnecting the Upper Gas Spring

Before you can disconnect the upper gas spring, you must disconnect the upper link of the mount (*Disconnecting the Upper Link of the Mount, page 2*) and disconnect the lower gas spring (*Disconnecting the Lower Gas Spring, page 1*).

- 1 Using a #2 Phillips screwdriver, remove the two screws ① that secure the lower gas spring clevis ② to the lower link of the mount.

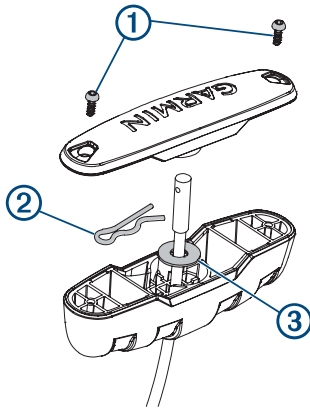


- 2 Lift the upper gas spring clevis off of the safety rod ③.

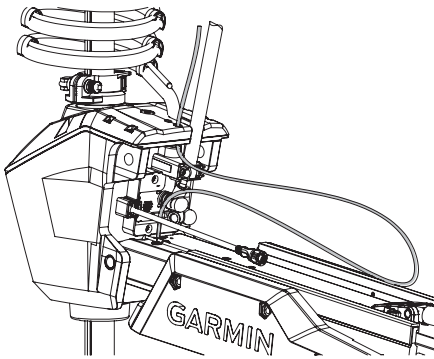
Removing the Pull Cable

After you remove the steering servo housing from the mount, the pull cable limits the distance you can move the motor away from the mount. If you plan to move the motor away from the boat to replace the bushings, you should remove the pull cable before disconnecting the lower link of the mount from the steering servo.

- 1 Using a #1 Phillips screwdriver, remove the two screws ① that secure top of the handle.



- 2 Push the pull cable up from the bottom of the handle, and remove the R-pin ②.
- 3 Pull the cable through the washer ③ and the bottom of the handle.
- 4 Pull the cable down through the hole in the top of the steering servo housing.



Disconnecting the Lower Link of the Mount from the Steering Servo

Before you can disconnect the lower link of the mount from the steering servo, you must disconnect the lower gas spring ([Disconnecting the Lower Gas Spring, page 1](#)) and you must disconnect the upper gas spring ([Disconnecting the Upper Gas Spring, page 2](#)).

⚠ CAUTION

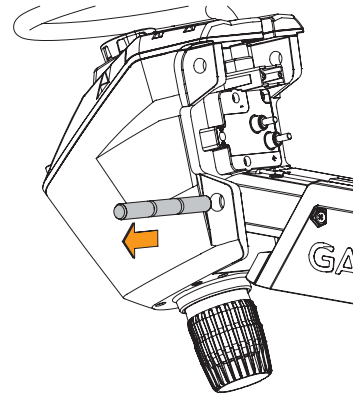
The lower pin is the final piece connecting the steering servo to the mount. When you remove the pin, the steering servo, and the drive motor and shaft, if they are still installed, may fall causing injury or damage. Use caution to support the weight of the steering servo before you remove the pin.

NOTE: This procedure is best performed with two people.

- 1 Slide the safety rods away from the steering servo to release the lower pivot pin.

NOTE: The two safety rods don't need to move very far to release the lower pivot pin. If either gas spring is still connected to the lower link, however, the safety rods lock the lower pivot pin in place, and it cannot be removed.

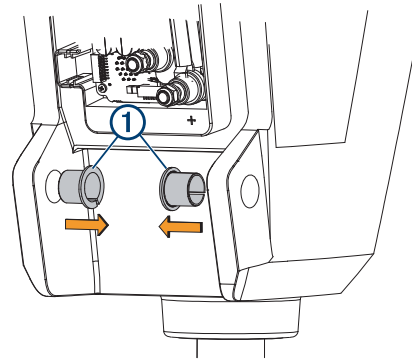
- 2 While supporting the weight of the steering servo, push the lower pin out from one side, and pull to remove it completely.



The steering servo is no longer connected to the mount.

Replacing the Bushings and Installing the Steering Servo on the Lower Link of the Mount

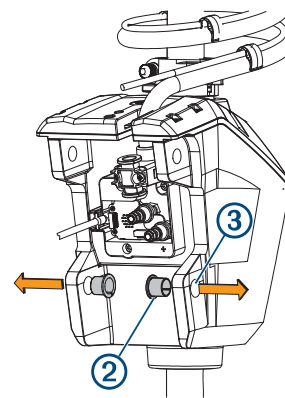
- 1 Remove the lower bushings ① from the steering servo housing.



- 2 Locate the replacement bushings labeled 15-3, 15-2, and 15-1 in the bushing replacement kit.

The second number indicates the thickness of the bushing. You should start with the thickest bushing (15-3).

- 3 From the inside out, insert the replacement bushings ② into the lower holes ③ on the steering servo housing.



- 4 Before connecting the steering servo housing to the lower link, attempt to push the pivot pin through the bushings you installed in the holes on the steering servo housing, and select an action:

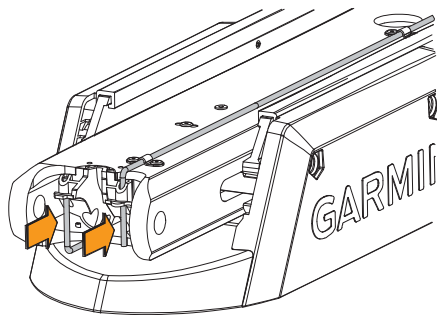
- If the pin successfully pushes snugly through the bushings, remove the pin and proceed to the next step.
- If the pin cannot fit through the bushings, repeat steps 3 through 5 using the next smallest bushing (from 15-3 to 15-2, and then from 15-2 to 15-1) until the pin successfully pushes snugly through the bushings.

NOTE: You should install the bushing thickness that works best in each side. It is not necessary to install bushings of the same thickness in both sides of the steering servo housing, and you should try different combinations to find the best fit that holds the steering servo housing tightly on the mount.

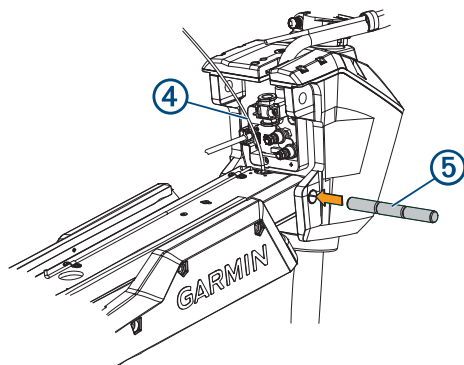
NOTICE

Do not hit the pin with a hammer or other object. Do not drill or modify the holes. Although it is a snug fit, the pin slides in completely when pushed by hand. Damage caused by hammering the pin or modifying the holes is not covered under warranty.

- 5 Push the two safety rods into the lower link as far as possible.



- 6 Holding the pull cable up, place the steering servo housing onto the lower link of the mount, aligning the lower holes on the housing with the holes on the link.



- 7 While lifting up on the steering servo housing, push the pivot pin through the housing and the link to hold it in place

NOTICE

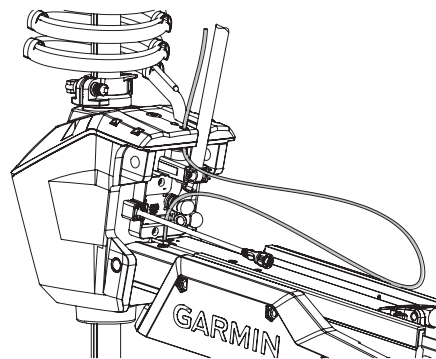
Do not hit the pin with a hammer or other object. Do not drill or modify the holes. Although it is a snug fit, the pin slides in completely when pushed by hand. Damage caused by hammering the pin or modifying the holes is not covered under warranty.

- 8 Keep the remaining bushings, because you may want to use them for future replacement.

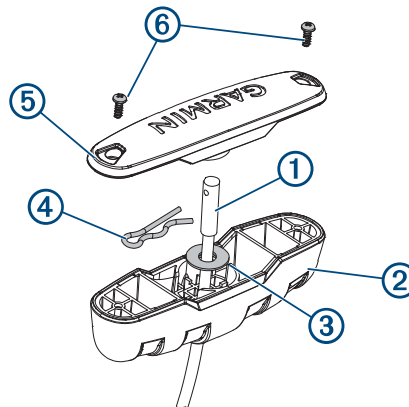
Reinstalling the Pull Cable

This procedure is necessary only if you removed the pull cable before removing the steering servo housing from the mount base.

- 1 Route the pull cable upward through the hole in the top of the steering servo housing.



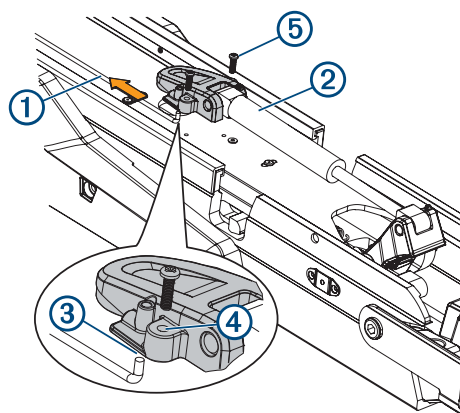
- 2 Insert the pull cable through the bottom half of the handle.



- 3 Insert the pull cable through the washer.
 - 4 Push the R-pin through the hole on the end of the pull cable.
 - 5 Pull the cable down so that the washer and R-pin rest in the bottom half of the handle.
- NOTE:** The R-pin fits in the bottom half of the handle one way only.
- 6 Using a #1 Philips screwdriver, secure the top of the handle to the bottom using the screws.

Securing the Upper Gas Spring

- 1 Push the safety rod toward the steering servo housing as far as possible to lock the lower pivot pin in place.



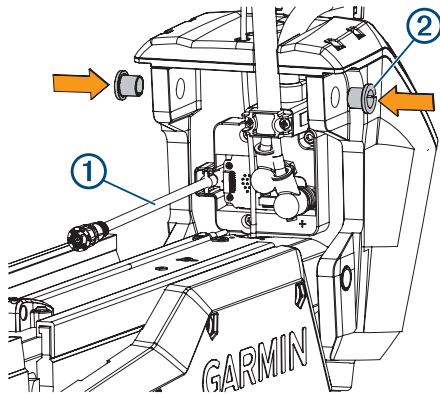
- 2 If necessary, pivot the upper gas spring toward the lower link of the mount so the base of the gas spring aligns with the safety rod and mounting holes.

NOTE: If you must rotate the gas spring so the base aligns with the mount, rotate the spring in a clockwise direction only. Rotating the gas spring in a counter-clockwise direction may loosen the fittings.

- Align the single hole on the base of the gas spring ③ with the safety rod, and press down.
The screw holes on the base ④ should align with the holes on the bottom of the mount.
- Using a #2 Phillips screwdriver, secure the base of the gas spring to the lower link of the mount using the included screws ⑤.

Replacing the Bushings and Connecting the Upper Link of the Mount to the Steering Servo Housing

- Locate the replacement bushings labeled 12-3, 12-2, and 12-1 in the bushing replacement kit.
The second number indicates the thickness of the bushing. You should start with the thickest bushing (12-3).
- Secure the display panel cable ① so that you do not accidentally damage it when following these steps.



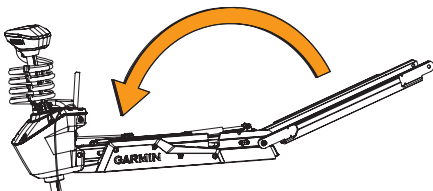
- From the outside in, insert the bushings ② in the upper holes on the steering servo housing.
- Before connecting the steering servo housing to the upper link of the mount, attempt to push the pin through the bushings you installed in the holes on the steering servo housing, and select an action:
 - If the pin successfully pushes snugly through the bushings, proceed to the next step.
 - If the pin cannot fit through the bushing, repeat steps 1 through 5 using the next smallest bushing (from 12-3 to 12-2, and then from 12-2 to 12-1) until the pin successfully pushes through the bushings.

NOTE: You should install the bushing thickness that works best in each side. It is not necessary to install bushings of the same thickness in both sides of the steering servo housing, and you should try different combinations to find the best fit that holds the steering servo housing stable on the mount.

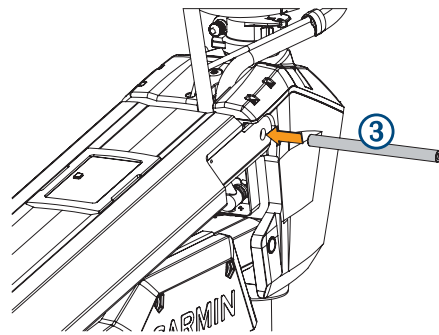
NOTICE

Do not hit the pin with a hammer or other object. Do not drill or modify the holes. Although it is a snug fit, the pin slides in completely when pushed by hand. Damage caused by hammering the pin or modifying the holes is not covered under warranty.

- Pivot the upper link of the mount forward.



- Tip the top of the steering servo housing inward so the holes on the upper link and the housing align.
- Push the pin ③ through the holes on the upper link of the mount and the steering servo housing.

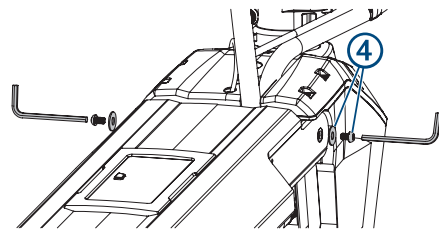


8 NOTICE

Do not hit the pin with a hammer or other object. Do not drill or modify the holes. Although it is a snug fit, the pin slides in completely when pushed by hand. Damage caused by hammering the pin or modifying the holes is not covered under warranty.

Keep the remaining bushings, because you may want to use them for future replacement.

- Using a 4 mm hex bit or hex wrench, secure the pin using the screws and washers ④ on both sides.



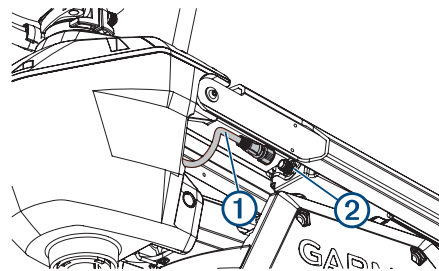
NOTE: To properly secure the pin, you should use two hex bits or wrenches so the pin does not rotate as you tighten the screws.

Connecting the Motor to the Display Panel

NOTICE

You must connect the cable from the steering servo to the display panel before proceeding further with assembly. If you do not make this connection now, the unsecured cable may damage the display panel when moving the mount.

- Route the cable ① from the steering servo housing to the display panel ② on the upper link of the mount.



- Push the connector onto the port on the display panel, and rotate the locking ring clockwise to secure it.

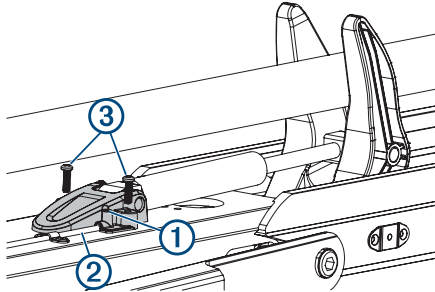
NOTE: The connector is keyed to fit into the port one way only, and will fit easily when aligned correctly. Do not force the connector into the port.

Securing the Lower Gas Spring

- 1 If necessary, transition the trolling motor from the deployed to the stowed position.

If the gas spring is positioned on the other side of the mount after you stowed the motor, you may need to lift up the mount and flip over the gas spring so you can secure it to the mount.

- 2 Align the hole on the base of the lower gas spring ① with the safety rod ②, and press down.



NOTE: If you must rotate the gas spring so the base aligns with the mount, rotate the spring in a clockwise direction only. Rotating the gas spring in a counter-clockwise direction may loosen the fittings.

- 3 Using a #2 Phillips screwdriver, secure the base of the lower gas spring to the mount using the screws you removed when disconnecting the gas spring ③.

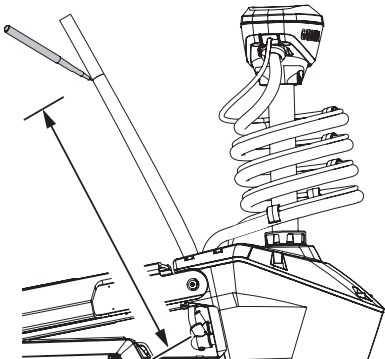
Routing the Power and Transducer Cables Through the Mount

After you have installed a replacement power cable, transducer, or shaft, you should route the power and transducer cables through the mount.

NOTICE

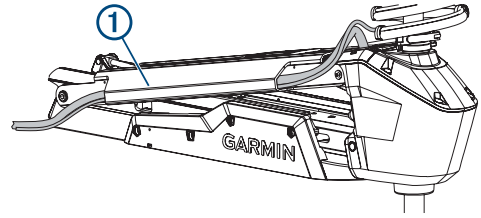
To avoid damaging the power and transducer cables when deploying and stowing the trolling motor and to avoid interference with the GPS and heading sensors in the motor, you must route the cables through the right (starboard) side of the mount and secure them using the included hardware. You must not route the power cable through the left (port) side of the mount, and it is not possible to install the included brackets on the left (port) side. The left (port) side is reserved for additional accessories or transducer cables that you may install in the future.

- 1 Measure approximately 40 cm (16 in.) on the power cable from where it connects to the steering servo housing, and look for the mark on the cable applied at the factory.



- 2 If you do not see a mark on the cable, or if the mark is not approximately 40 cm (16 in.) from the connection, make a mark with a marker or tape.

- 3 With the motor in the deployed position, route the transducer cable through the channel along the right (starboard) side of the mount ①.



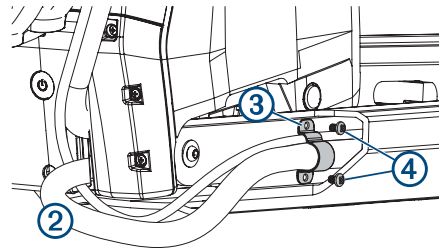
TIP: To determine the right (starboard) side of the mount, stand in a location where you can read the information on the display panel.

- 4 Route the power cable through the channel above the transducer cable.
- 5 Using the pull cable, carefully lift the motor from the deployed position to the stowed position.

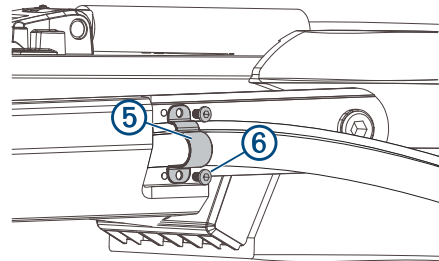
NOTICE

You must secure the cables to the mount with the motor in the stowed position. If you complete this procedure with the motor in the deployed position, the cables are not at their fully extended length, and the added stress may damage the cables during use.

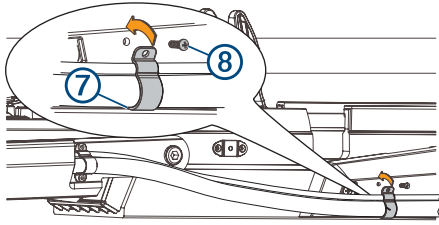
- 6 Leaving a rounded bend in the cables ②, hold them against the side of the mount where they enter the channel.



- 7 At the marked location on the power cable, place one of the brackets that has two screw holes ③ over the cables and against the mount, aligning the holes on the bracket with the holes on the mount.
- 8 Using a 3 mm hex bit or wrench, secure the bracket to the mount using two screws ④.
- 9 Hold the cables against the bottom of the mount where they exit the channel.
- 10 Place the other bracket that has two screw holes ⑤ over the cables and against the mount, aligning the holes on the bracket with the holes on the mount.



- 11 Using a 3 mm hex bit or wrench, secure the bracket to the mount using two screws ⑥.
- 12 Hold the cables against the plastic portion of the mount base, close to the boat deck.
- 13 Insert the lower tab on the remaining bracket into a slot below the cables ⑦, and rotate the bracket toward the mount base to hold the cables.



14 Using a #1 Phillips screwdriver, secure the upper tab of the bracket to the mount base using a single screw ⑧.

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