

GRF™ 10 Installation Instructions

⚠ WARNING

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

Installation Preparation

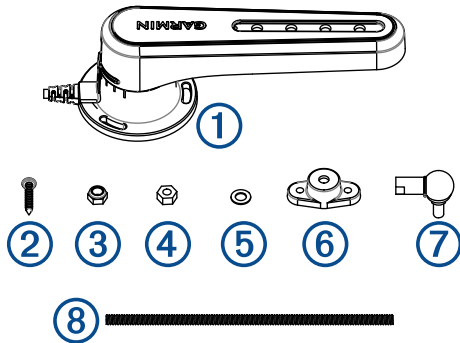
⚠ CAUTION

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.

Package Contents

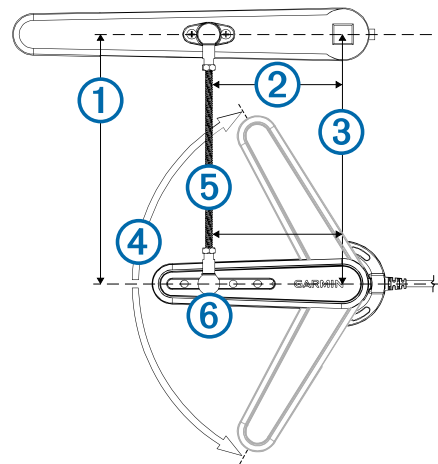


Item	Description
①	GRF™ 10
②	M4 screw (×5)
③	M6 locknut (×2)
④	M6 nut (×2)
⑤	Washer
⑥	Tiller arm mount
⑦	Ball joint assembly (×2)
⑧	Threaded rod

Tools Needed

- Drill and 1/8 in. (3.2 mm) drill bit
- 8 and 10 mm wrenches
- 10 mm socket
- Metal saw appropriate for cutting a threaded rod
- #2 Phillips screwdriver
- Tape measure
- Pencil or marker
- Extension cables, if necessary ([page 2](#))

Mounting Considerations



①	The sensor must be installed parallel to the tiller arm while the rudder is amidships.
②	The distance from the rotation axis of the tiller to the ball-joint assembly must be the same as the distance from the rotation axis of the sensor to the ball joint assembly.
③	The sensor and rudder rotation axes must be aligned.
④	The maximum range of travel from stop to stop is 140° (70° from the center position to each stop). Exceeding this range may result in damage to the sensor.
⑤	The rod that connects the sensor to the tiller arm is 11.8 in. (300 mm) long, and can be shortened if needed. The rod should be level when connected to the sensor and rudder. If a perfectly level installation is not possible, the rod must be installed within +/- 5° off level in order to function correctly.
⑥	The rod should be installed perpendicular to the tiller arm and sensor, using the second hole from the tip of the sensor for the ball-joint connector. Although the second hole is preferred, the other holes may be used if necessary for the installation location.

Connection Considerations

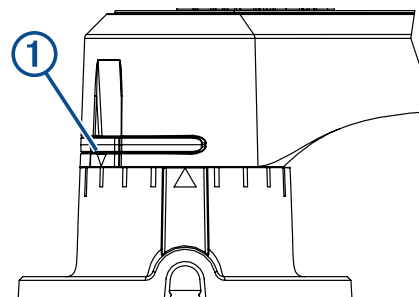
- This sensor can be connected to a compatible Garmin® autopilot system with a 12-pin rudder feedback connector.
- The cable connected to the sensor is 78 in. (2 m) long.
 - If needed, extension cables for the sensor are available from your Garmin dealer.
 - Do not cut the sensor cable to extend or shorten it.

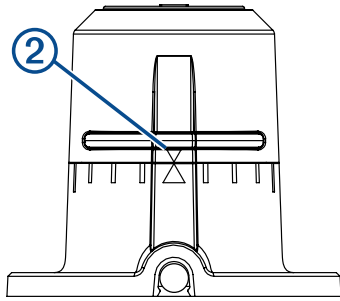
Installation Procedures

Installing the Sensor

For the best results, keep the rudder amidships during the sensor-installation process.

- 1 Rotate the sensor counter-clockwise so the arrows on the back ① line up in the center ② before marking the mounting holes.





- 2 Place the sensor in the chosen mounting location, and mark the center of the three mounting holes.
- 3 Place the tiller-arm mount on the tiller arm in the chosen location, and mark the center of the two mounting holes.
- 4 Using a $\frac{1}{8}$ in. (3.2 mm) bit, drill three pilot holes on the mounting surface for the sensor, and two pilot holes on the tiller arm for the tiller-arm mount.
- 5 Fasten one of the ball-joint assemblies to the tiller-arm mount, using the included M6 locknut.
- 6 Place the other ball-joint assembly into the appropriate hole on the sensor (typically the second hole from the tip), and fasten it with the included washer and locknut, using a 10 mm socket.
- 7 Tighten the ball-joint assemblies using a 8 mm wrench at the base.
- 8 Fasten the sensor to the mounting surface using the included screws.
- 9 With the rudder amidships and the sensor at center position, measure the distance from the ball-joint assembly on the sensor to the location where you plan to attach the tiller-arm mount to the tiller arm.
- 10 If the threaded rod is too long, you must cut it to the correct length (page 3).
- 11 Thread both of the standard M6 nuts onto the threaded rod.
- 12 Thread the rod into the ball-joint assembly connected to the sensor.
- 13 Thread the other end of the rod into the ball-joint assembly connected to the tiller-arm mount.
- 14 Fasten the tiller-arm mount to the tiller using the included screws.
- 15 Tighten the M6 nuts on the threaded rod against both of the ball-joint assemblies.

Cutting the Threaded Rod

If the included threaded rod is too long for your chosen installation location, you must cut it.

- 1 Thread one of the included standard M6 nuts onto the threaded rod.
Do not use one of the included M6 locknuts.
- 2 Measure and mark the threaded rod with electrical tape.
- 3 Using the appropriate saw, cut the threaded rod at the marked location.
- 4 Remove the nut from the threaded rod, turning it counter-clockwise over the cut area.
The nut should straighten any threads that may have been damaged while cutting the rod.

Connecting the Device to the Autopilot System

- 1 Route the cable from the sensor to the orange 12-pin connector on the ECU of the autopilot system.
The installation instructions provided with your autopilot system will help you identify where this connector is located.
If needed, extension cables are available.

- 2 Connect the sensor to the autopilot system.

Configuring the Sensor

When connected to a Garmin autopilot system, the sensor is configured using the autopilot helm control.

NOTE: If an error appears during these steps, the sensor may have reached the limit of its movement range. Make sure the sensor was installed correctly. If the problem persists, bypass this error by moving the rudder to the farthest position that does not report an error.

- 1 Enter Dealer Mode by following the procedures in your autopilot installation instructions.
- 2 From the Heading screen, select **Menu > Setup > Dealer Autopilot Configuration > Steering System Setup > Rudder Sensor Setup**.
- 3 Position the rudder so that the boat would steer fully starboard, and select **OK**.
- 4 After the starboard calibration is complete, position the rudder so that the boat would steer fully port, and select **OK**.
- 5 After the port calibration is complete, center the rudder position, let go, and select **Begin**.
The autopilot takes control of the rudder.
- 6 Wait while the autopilot calibrates the rudder.
- 7 Select an option:
 - If the calibration completes successfully, select **OK**.
 - If the calibration did not complete successfully, repeat steps 2–6.

Appendix

Specifications

Specification	Measurement
Dimensions (H×W×D)	2 ¹⁵ / ₆₄ × 2 ³ / ₄ × 7 ¹⁷ / ₃₂ in. (60.8 × 70 × 191.4 mm)
Weight	5.54 oz. (157 g)
Temperature range	From 5°F to 158°F (from -15°C to 70°C)
Material	Polyoxymethylene (POM), waterproof to IEC 60529 IPX7 standards
Cable length	6½ ft. (2 m)
Max cable extension	49 ft. (15 m) Up to three 16 ft. 4 in. (5 m) extensions
Nominal input voltage	4.5–5.5 Vdc
Compass-safe distance	3.2 ft. (1 m)

Registering Your Device

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

- Go to [garnin](#).
- Keep the original sales receipt, or a photocopy, in a safe place.