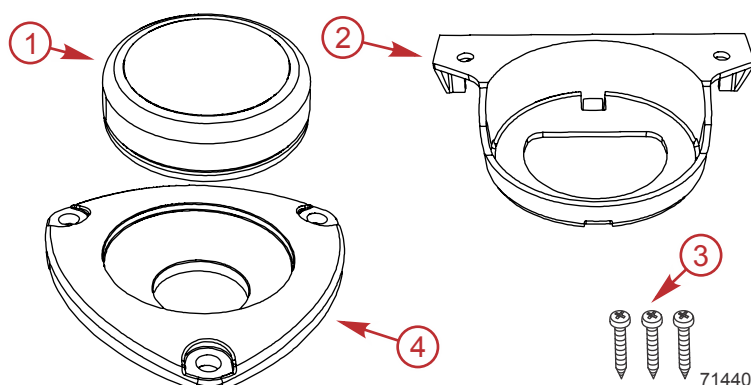


# SMARTCRAFT/NMEA 2000 GPS

**IMPORTANT:** This document guides our dealers, boatbuilders, and company service personnel in the proper installation or service of our products. If you have not been trained in the recommended servicing or installation procedures for these or similar Mercury Marine products, have the work performed by an authorized Mercury Marine dealer technician. Improper installation or servicing of the Mercury product could result in damage to the product or personal injury to those installing or operating the product. Always refer to the appropriate Mercury Marine manual for component removal and installation instructions.

**NOTE:** After completing installation, place these instructions with the product for the owner's future use.

## Components Contained in Kit



| Ref. No. | Qty. | Description                                            |
|----------|------|--------------------------------------------------------|
| 1        | 1    | GPS sensor                                             |
| 2        | 1    | Under helm bracket                                     |
| 3        | 2    | Screws, wood #8 (5.4 mm (0.21 in.) x 13 mm (0.51 in.)) |
| 4        | 4    | Deck mounted bracket                                   |

### WARNING

Use of this GPS as a navigational source for any automatic pilot system where that system has control of the vessel heading, steering systems, trolling motors, or engines could result in serious injury or death from the loss of vessel control. These referenced automatic piloting systems include but are not limited to Mercury Marine joystick and electric steering systems in all configurations.

## Certification

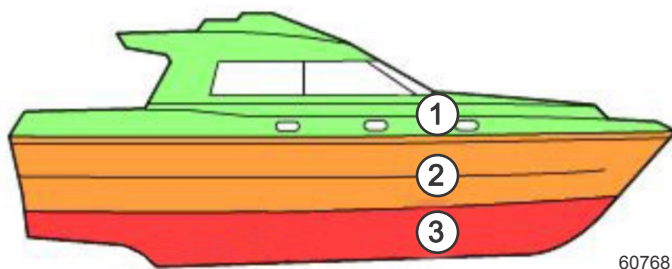
|                                         |                                                          |
|-----------------------------------------|----------------------------------------------------------|
| NMEA 2000 load equivalency number (LEN) | 2                                                        |
| NMEA certification                      | Yes                                                      |
| Product name                            | Mercury SmartCraft/N2K GPS                               |
| Description                             | Mercury GNSS receiver for SmartCraft or N2K applications |
| Manufacturer code                       | 144-Mercury Marine                                       |
| Product code                            | 27251                                                    |
| Class code                              | 60-Navigation                                            |
| Function code                           | 145-Ownship position (GNSS)                              |

## Mounting Requirements

**IMPORTANT:** The GPS sensor connection is considered a drop off of the CAN bus or NMEA network. Ensure that the installation of the GPS sensor does not exceed CAN bus length specifications.

**IMPORTANT:** The installation location must take into account the following requirements:

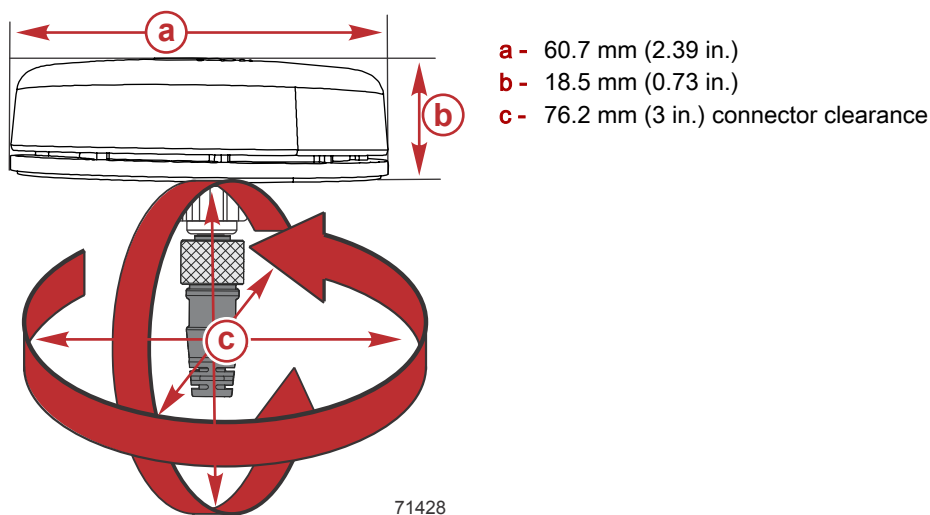
- **Elevation (above vs below deck)**—Although the GPS sensor antenna can be mounted above or below the deck, mounting above the deck will yield optimal performance.



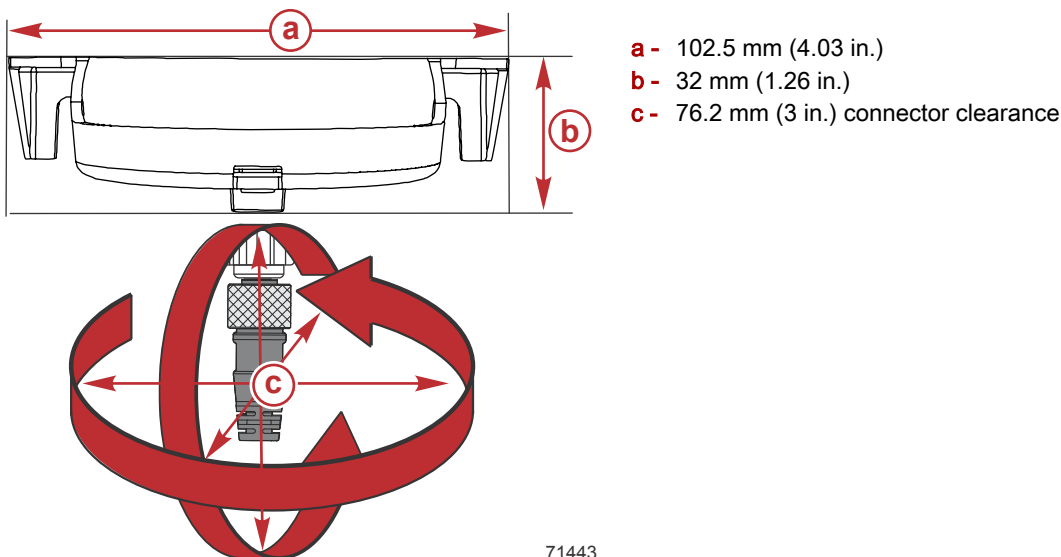
| Location | Location description                                                                                                                            |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Mounted above decks with clear unobstructed view of the sky in all directions. This location provides optimal GPS sensor performance.           |
| 2        | Mounted below decks with only fiberglass between the sky and GPS sensor. A reduction in sensor performance will occur when mounted below decks. |
| 3        | This location is not recommended for the GPS sensor installation.                                                                               |

- **All Location Requirements**—Mount the GPS sensor in an area close to the vessel's center of gravity to reduce pitch and roll effects on position reporting. Install the GPS sensor a safe distance away from all hazards that could result in physical damages, excessive vibration, or excessive heat.
- **Electromagnetic Interference (EMI)**— Poor performance and loss of satellite signals will result from mounting the GPS sensor too close to strong sources of EMI. Observe the following installation requirements regarding EMI:
  - Mount the GPS sensor a minimum of 0.91 m (3 ft) from any engine(s).
  - Mount the GPS sensor a minimum of 0.91 m (3 ft) from any radio or radar antennas.
  - Do not mount the GPS sensor in the direct path of any radar antennas.
- **Vessel construction**—Do not mount the GPS sensor in locations where immediate surroundings of the boat structure contain large metallic or reflective material surfaces.
- **Prevailing conditions**—Calm and clear weather conditions provide optimal conditions for GPS sensor accuracy. Locations at extreme North or South latitudes may reduce the GPS satellite signal strength. GPS sensors that are mounted below decks will be more susceptible to performance issues when operating in sub-optimal conditions or locations.

## GPS Sensor and Connector Clearance Dimensions



## Under Helm Bracket and Connector Clearance Dimensions



## Sensor Installation

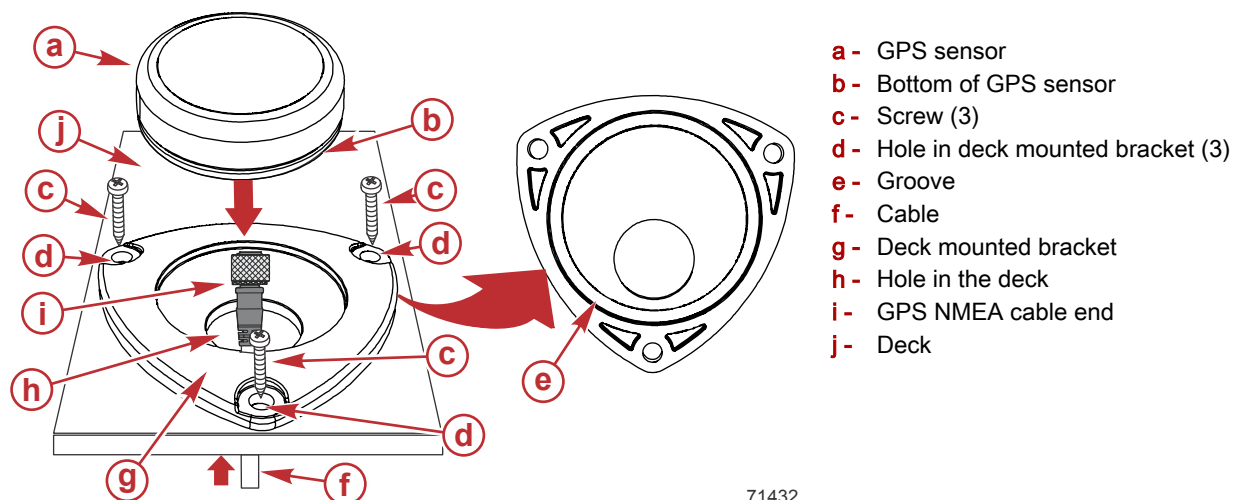
### GPS Sensor Mounting

**IMPORTANT:** Perform the installation only with the vessel at a complete standstill either on land or secured to a dock.

### Deck Mounted Bracket

- Using the dimensions from **GPS Sensor and Connector Clearance Dimensions**, choose a suitable location to mount the GPS sensor deck mounted bracket.
- Using the deck mounted bracket as a template, mark the location for the NMEA 2000 harness pass-through hole on the deck and mark the location for the three screws on the deck.  
**IMPORTANT: Do not drill through the deck mounted bracket.**
- Use a 22 mm hole saw or suitable cutting tool to remove the deck material for the NMEA 2000 harness pass-through hole.
- Drill three pilot holes using a 3.18 mm (1/8 in.) drill bit for the #8 screws.
- Apply a bead of weather-proof marine grade sealant to fill the sealant groove on the bottom of the deck mounted bracket.
- Affix the deck mounted bracket to the deck surface while aligning the pass-through hole in the deck to the hole in the bracket. Simultaneously, align the screw holes in the bracket with the pre drilled pilot holes.  
**IMPORTANT: Do not overtighten the three screws.**  
*NOTE: Different deck materials may require the screws to be tightened to specific torque values.*
- Install the deck mounted bracket on the deck with the three screws.
- Remove any excess sealant that has pushed through to outside of the deck mounted bracket or inside of the hole in the deck.
- Route the NMEA 2000 harness through the hole in the deck and deck mounted bracket.
- Thread and tighten by hand the NMEA 2000 harness end onto the GPS NMEA receptacle, being careful not to cross-thread the fittings.
- Locate and remove the paper covering on the adhesive ring located on the bottom of the GPS sensor.

12. Install the GPS sensor into the deck mounted bracket. Press firmly in multiple locations around the GPS sensor to ensure 360-degree contact between the adhesive ring and deck mounted bracket.



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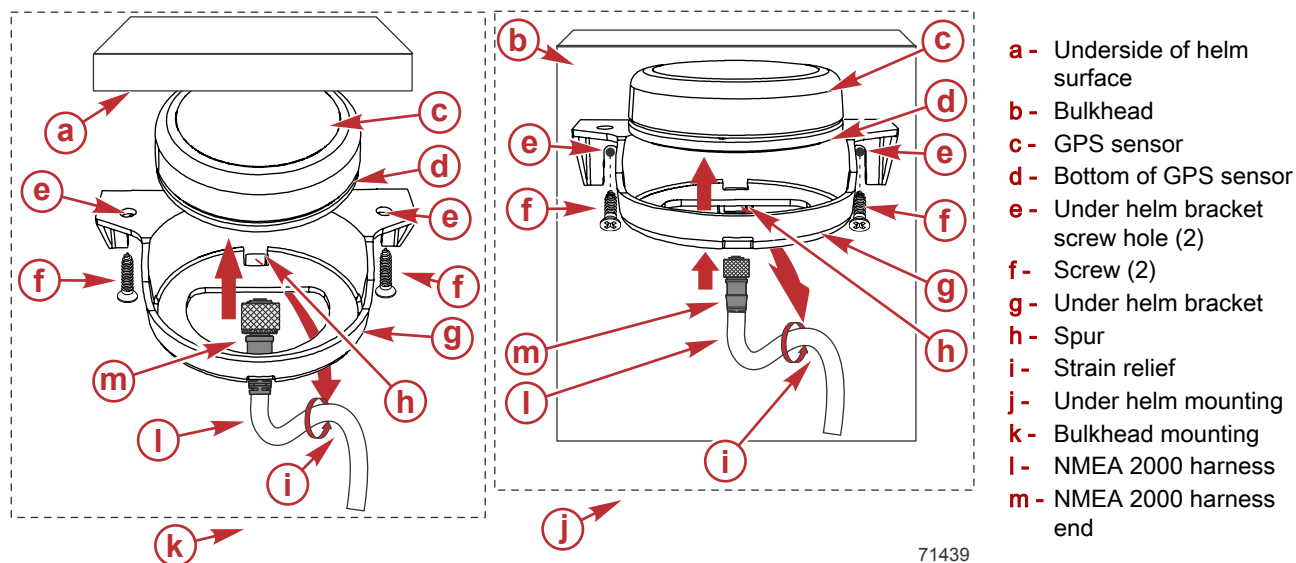
## Under Helm or Bulkhead Mounting

1. Using the dimensions from **Under Helm Bracket and Connector Clearance Dimensions**, choose a suitable location to mount the GPS sensor under helm bracket.
2. Route the NMEA 2000 harness through the under helm bracket.
3. Thread and tighten by hand the NMEA 2000 harness end onto the GPS NMEA receptacle, being careful not to cross-thread the fittings.
4. Remove the paper covering on the adhesive ring located on the bottom of the GPS sensor.
5. Install the GPS sensor into the under helm bracket. Press firmly in multiple locations around the GPS sensor to ensure 360-degree contact between the adhesive ring and the under helm bracket.
6. Place the under helm bracket assembly flush against the underside of the helm or the bulkhead surface.
7. Mark and use a 3.18 mm (1/8 in.) drill bit to pre-drill the screw holes into the underside of the helm or the bulkhead surface.

**IMPORTANT: Do not overtighten the two screws.**

**NOTE:** Different deck materials may require the screws to be tightened to specific torque values.

8. Install the under helm bracket assembly under the helm or the bulkhead surface with the two screws.
9. Make a strain relief in the cable as shown below and attach the strain relief to the under helm bracket spur with a cable tie.

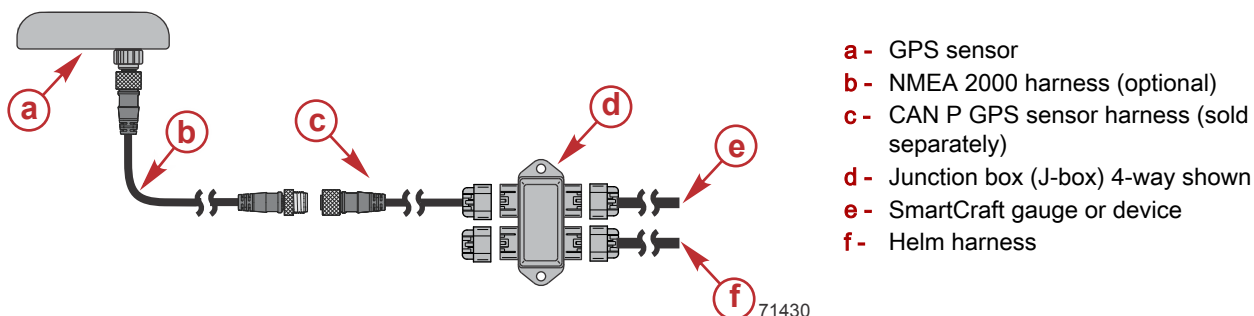


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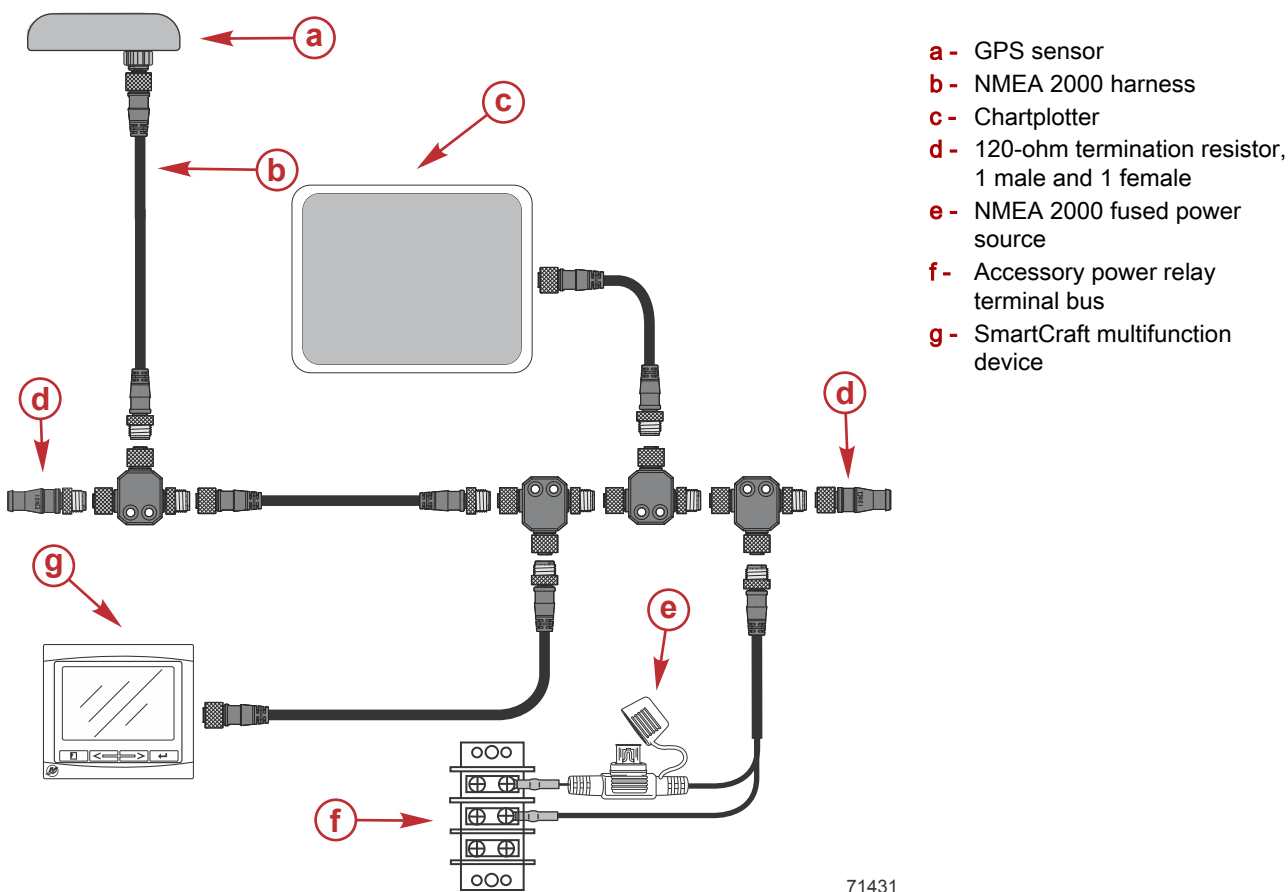
## GPS Sensor Connections

The GPS sensor is fully compatible with Mercury SmartCraft and NMEA 2000 communication networks. Refer to the following diagrams to properly connect the GPS sensor to the network on your vessel.

### GPS Sensor Connection—CAN P



### GPS Sensor Connection—NMEA 2000



## Verification

### For GPS Speedometer for a Display:

Using a NMEA 2000 MFD, locate the network device list and verify the GPS sensor is on the list of devices. Refer to the MFD's operations manual to locate network data screen.

### For a Mercury Marine MFD or SmartCraft Gauge:

1. Using a Mercury Marine MFD, locate the network device list and verify the GPS sensor is on the list of devices. Refer to the MFD's operations manual to locate network data screen.
2. For the System Tachometer, System Speedometer, MercMonitor, or other SmartCraft capable gauges refer to the applicable operations manual to correctly source the GPS sensor. Test operations.

## For Mercury Marine Active Trim feature:

Test and verify the functionality of the Active Trim. The GPS sensor should automatically connect to Active Trim controller.

## NMEA 2000 PGN Information

| Data PGNs | Data                      |
|-----------|---------------------------|
| 59904     | ISO Request               |
| 60160     | ISO transport protocol    |
| 60416     | ISO transport protocol    |
| 60928     | ISO address claim         |
| 126464    | PGN List                  |
| 126992    | System time               |
| 126993    | Heartbeat                 |
| 126996    | Product information       |
| 126998    | Configuration information |
| 129025    | Position, rapid update    |
| 129026    | COG and SOG, rapid update |
| 129029    | GNSS position data        |
| 129539    | GNSS DOPs                 |
| 129540    | GNSS sats in view         |

**Products of Mercury Marine**  
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