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## Mercury Racing Trim Sender Set-up

### Models Affected

Mercury Racing drives and trim tabs that utilize a digital trim sender.

Models Covered	Serial Number Or Year
M8	All
Bravo One XR	With digital trim sender
Bravo One ITS	With digital trim sender
Trim tabs	With digital trim sender

### Scope

Worldwide

### Situation

Provides instruction to install and calibrate the digital trim sensor on Mercury Racing engines with DTS, Mercury Racing drives, and trim tabs.

### SmartCraft Trim Position Sensor Important Information

The 3-wire SmartCraft trim position sensor and cover kit is applicable to SmartCraft gas transoms that use the 3-wire SmartCraft trim position sensor. For models that require an analog trim signal input for an analog trim gauge, order kit part number 8M0107462.

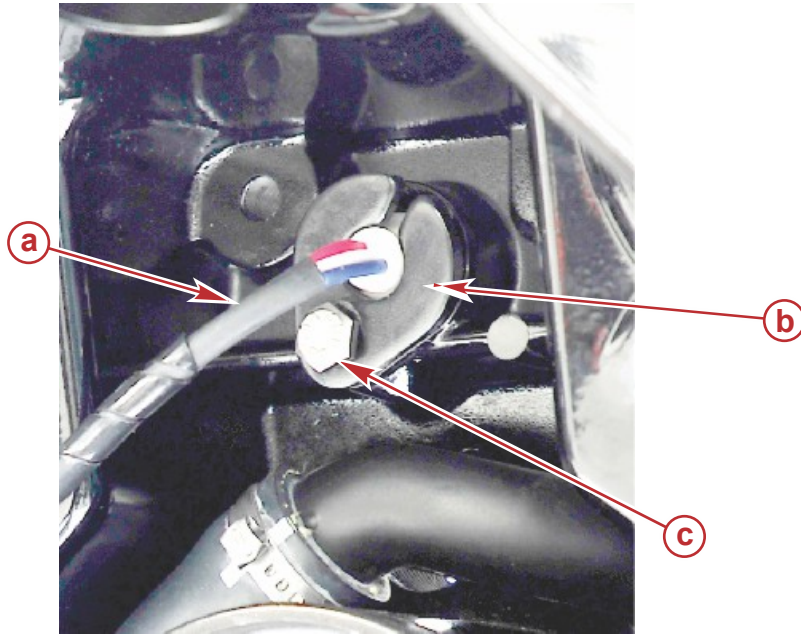
### Bravo One XR and ITS Trim Sensor Removal

1. Place the sterndrive in the full-in position.
2. Place the sterndrive in a full starboard turn.
3. Disconnect the trim position sensor wiring from the transom harness connector.

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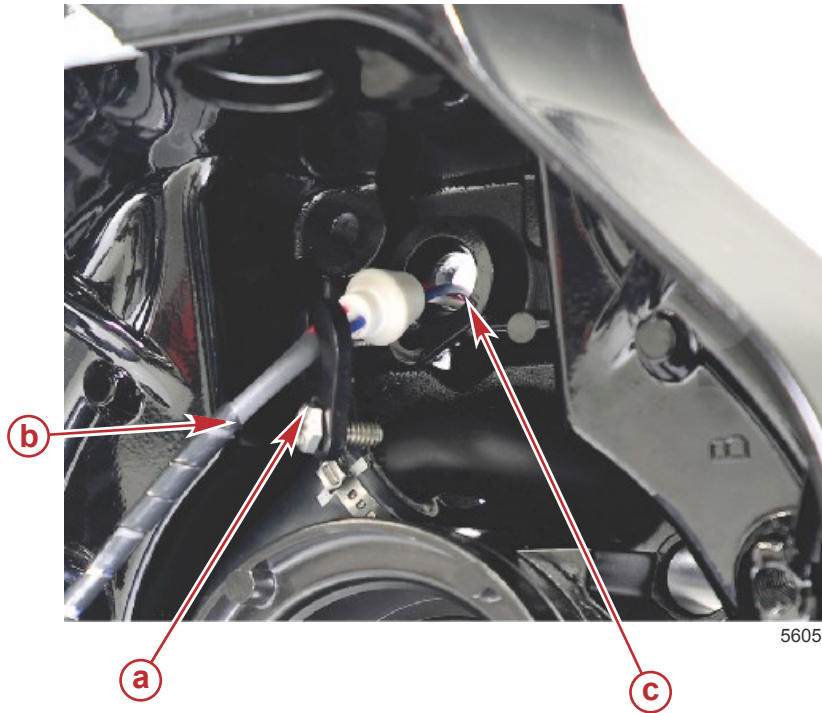
- Remove and retain the clamp plate and hardware.



- Shown disassembled for clarity**
- a** - Trim sensor harness
  - b** - Clamp plate
  - c** - Retainer screw

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- Pull approximately 30 cm (1 ft) each of the trim position sensor harness and the analog trim sender harness out of the gimbal housing.



- Shown disassembled for clarity**
- a** - Clamp plate
  - b** - Trim sensor harness
  - c** - Grommet hole of the gimbal housing

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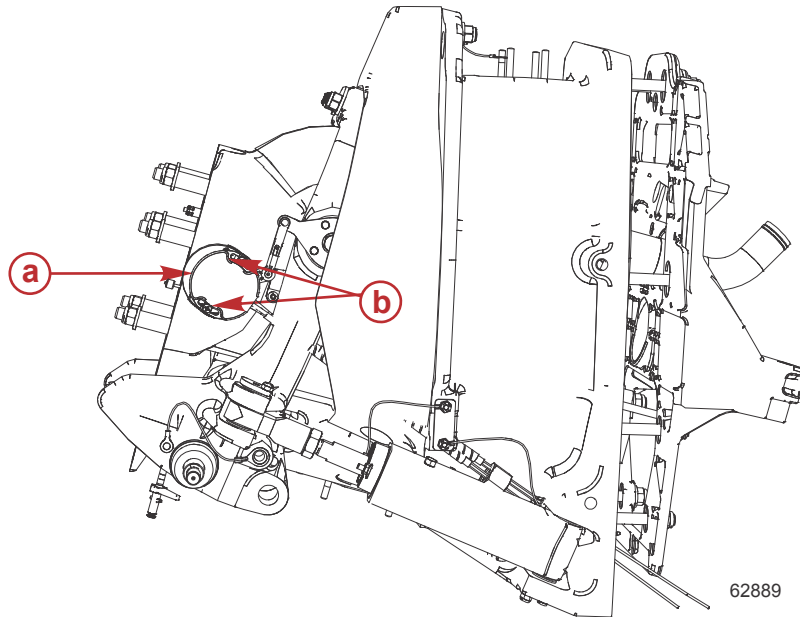
**IMPORTANT: Retain all the parts if the repair or replacement is done under warranty. Return both the sensor and harness for warranty credit.**

- Cut the trim position sensor harness and the analog trim sender harness just forward of the tapered plugs. Do not remove the harnesses from the gimbal housing. It will be used to pull the new harness through.

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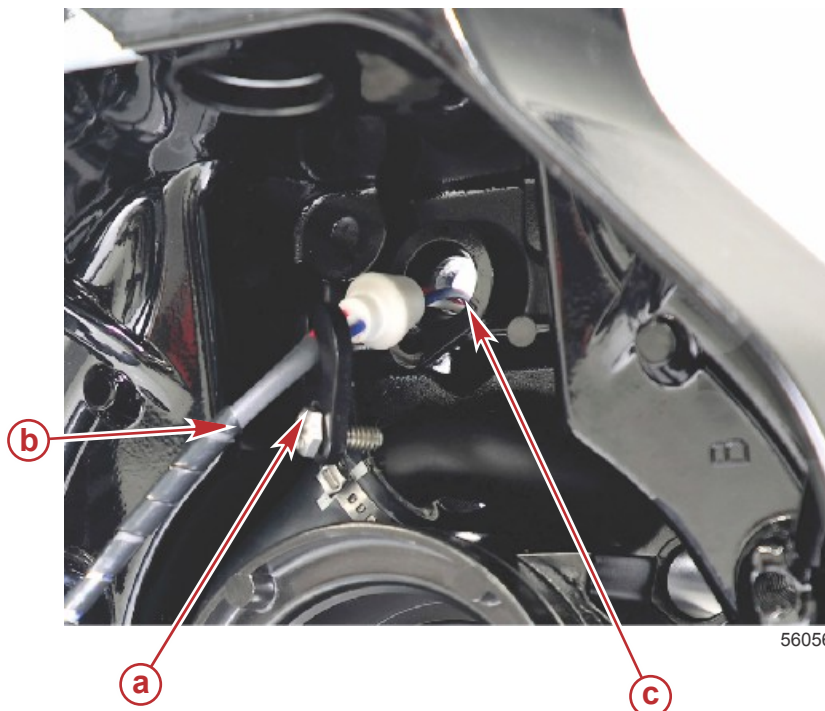
- Remove and discard the trim position sensor and analog trim sender. Retain the screws, washers, and retainers from both the analog sender and 3-wire sensor.



- a** - Trim position sensor
- b** - Screw, washer, and retainer

## Bravo One XR and ITS Trim Sensor Installation

- Tape the connector end of the new sensor harness to the cut ends of the old harnesses.
- Pull the new harness through the gimbal housing using the old harnesses.
- Remove and discard the old harness.
- Position the grommet attached to the sensor wires in the grommet hole and seat the grommet in the gimbal housing grommet hole. Maintain light tension on the wires from inside the boat to hold the grommet in place.



Shown disassembled for clarity

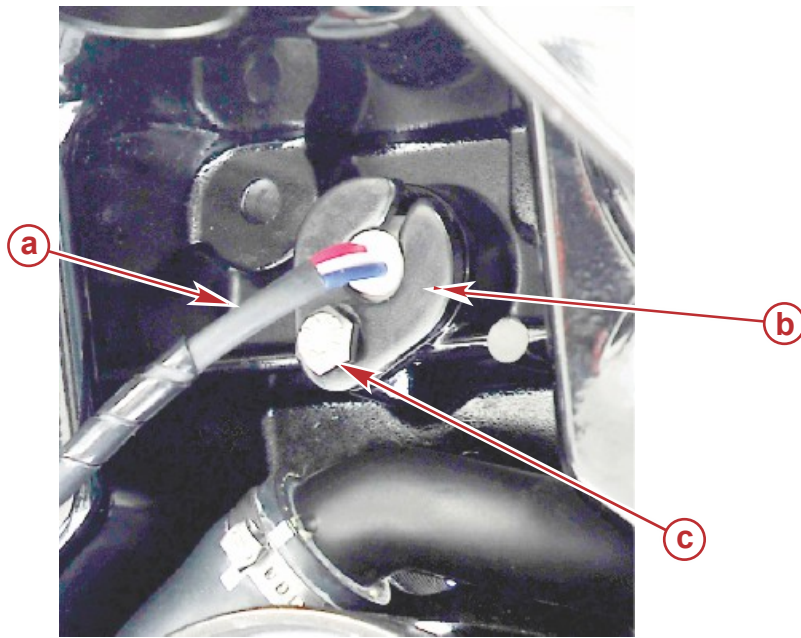
- a** - Clamp plate
- b** - Trim sensor harness
- c** - Grommet hole of the gimbal housing

- Ensure that the trim position sensor wiring is positioned to the starboard side of the gimbal housing.

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
6. Apply sealant to the screw threads and install the trim harness clamp plate. Tighten the screw to the specified torque.



Shown disassembled for clarity

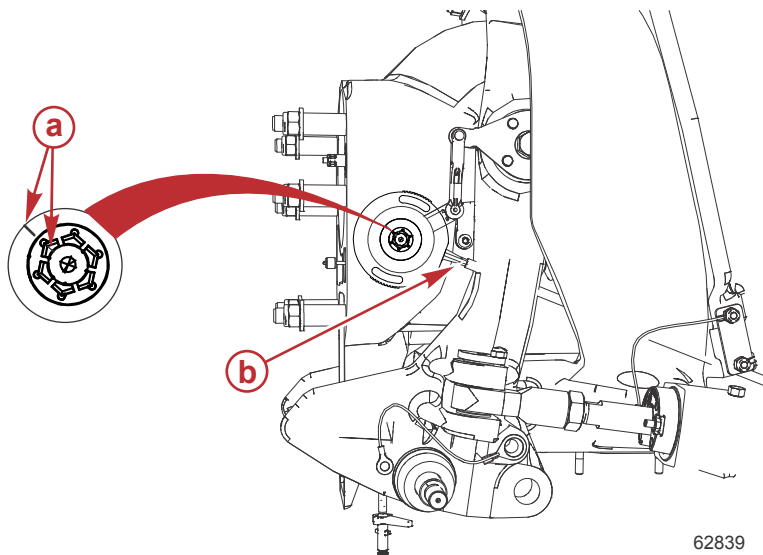
- a - Trim sensor harness
- b - Clamp plate
- c - Retainer screw

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Tube Ref No.	Description	Where Used	Part No.
 19	Perfect Seal	Trim harness clamp screw threads	92-34227Q02

Description	Nm	lb-in.	lb-ft
Trim harness clamp screw	11	97.3	-

7. Install the trim position sensor as follows:
- a. Place the sterndrive in the full-in (all the way down) position.
  - b. Place the sterndrive in a full starboard turn.
  - c. Align the index mark on the rotor with the index mark #1 on the sensor body.



Align line on the sender with the line on the sender arm

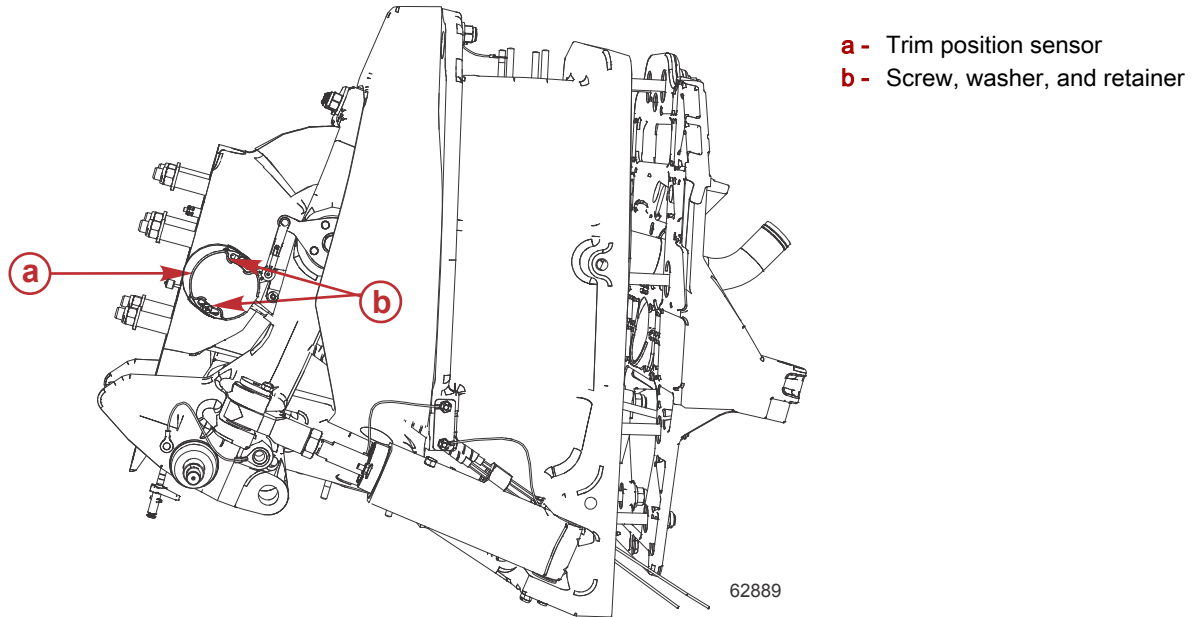
- a - Aligned index marks
- b - Harness position

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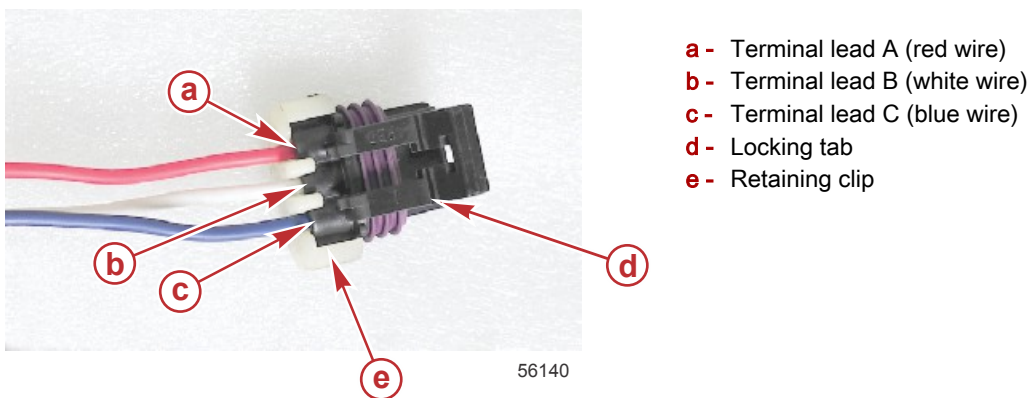
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- d. Install the trim position sensor on the port side of the gimbal ring, and secure it with retained screws, washers, and retainers.



- e. Install the empty trim position sensor cover in place of the analog sender on the starboard side of the gimbal ring.
8. Install the harness terminal leads into the harness terminal connector block of the trim position sensor as follows:
- Insert the terminal lead "A" into the terminal marked "A" on the terminal connector. Push the terminal lead into the terminal block until the terminal lead clicks into place and cannot be pulled out.
  - Repeat step "a" for terminal leads "B" and "C" and ensure that all three terminals are securely locked.
  - Place the terminal lead retaining clip over the leads at the rear of the terminal connector block.
  - Push the retaining clip onto the terminal connector block until it snaps into place over the locking tabs located on either side of the terminal connector block.

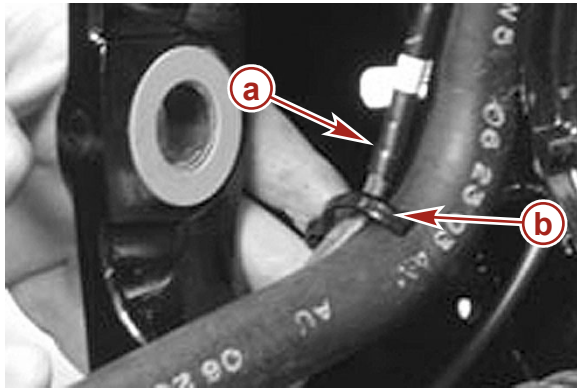


9. Connect the trim position sensor connector to the transom harness connector.

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- Secure the trim position sensor harness to the water hose with the plastic retaining clip.



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- Shown disassembled for clarity**
- a** - Trim position sensor harness
  - b** - Retaining clip

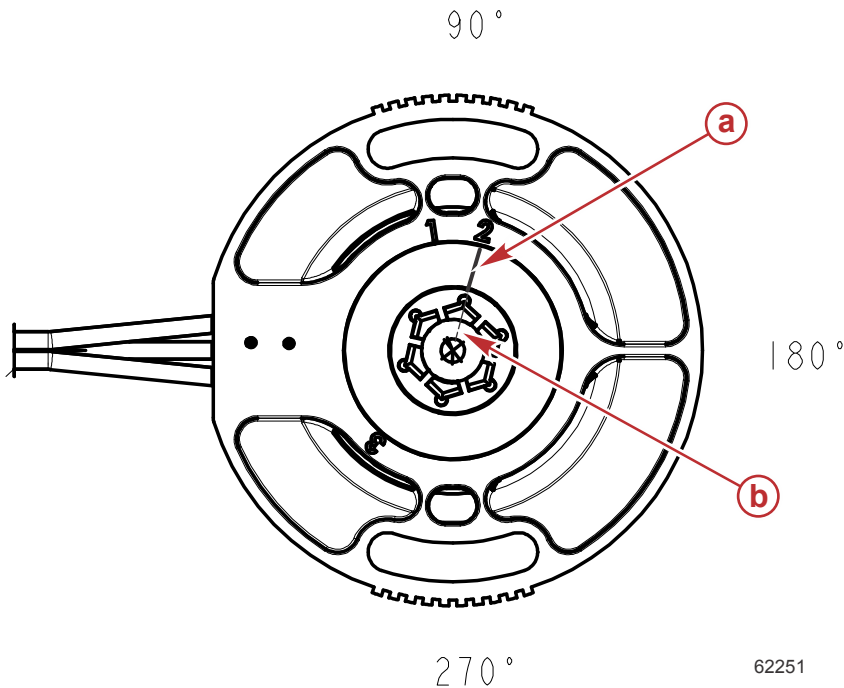
- Refer to the CDS G3 tool to set the ADC count to 174 counts with the drive in the full down position.

## M8 Trim Sensor Removal

- Disconnect the trim sender connector and remove the wires from the connector.  
*NOTE: If the sender is being replaced, the connector can be cut off instead of removing the wires from the connector.*
- Remove the screw and clamp securing the harness to the gymbal ring.
- Make note of the way the harness wires are fastened next to the hydraulic hoses for installation of the new sender harness.
- Remove the screws securing the sender to the sender mount and remove the sender from the drive.

## M8 Trim Sensor Installation

- Install the trim position sensor as follows:
  - Place the sterndrive in the full-in (all the way down) position.
  - Align the index mark on the rotor with the index mark #2 on the sensor body.



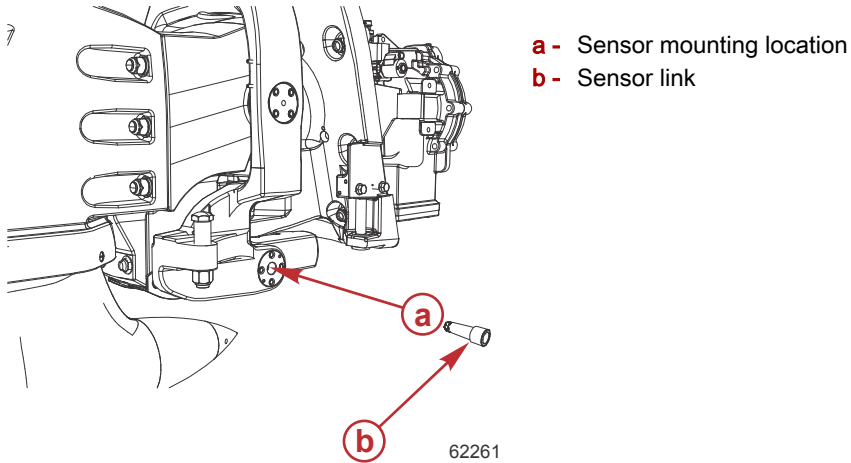
- Aligned index marks**
- a** - Index mark on outer ring
  - b** - Index mark on inner gear

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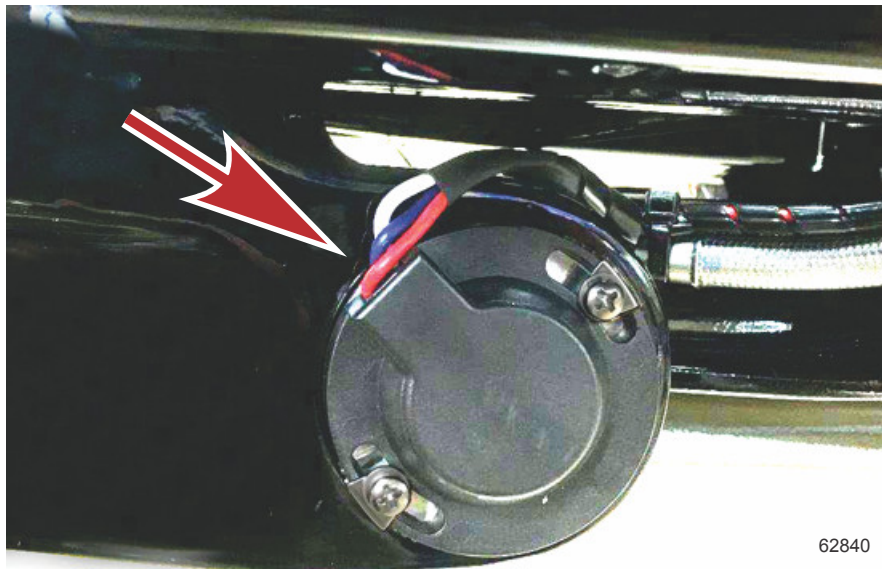
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- c. Install the sensor link, if removed, into the opening of the mounting pad. Rotate the link until it seats into the trim actuator.



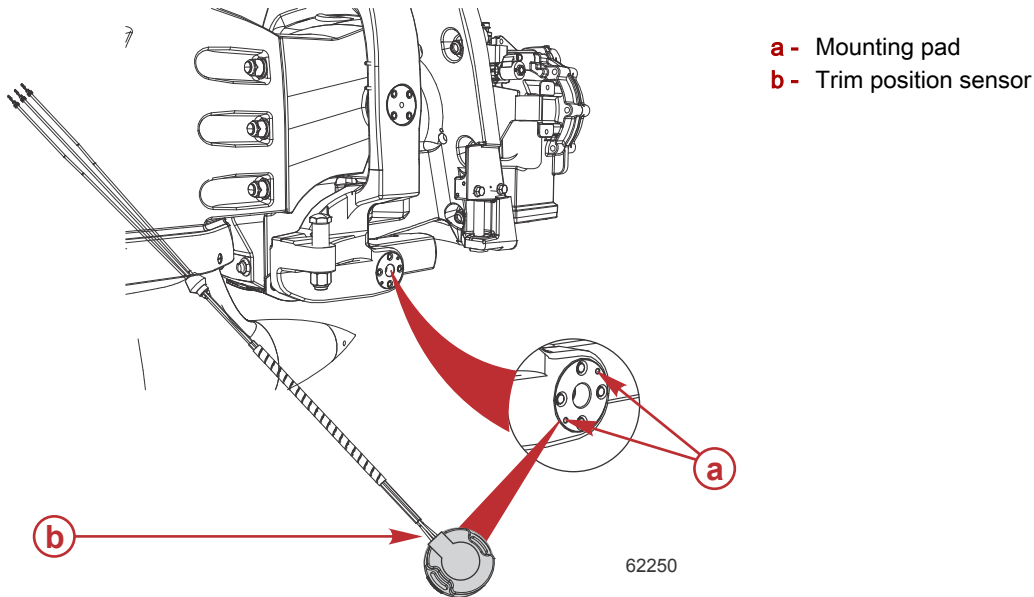
- d. Install the trim position sensor on the starboard side of the gimbal ring, and secure it with retained screws, washers, and retainers.



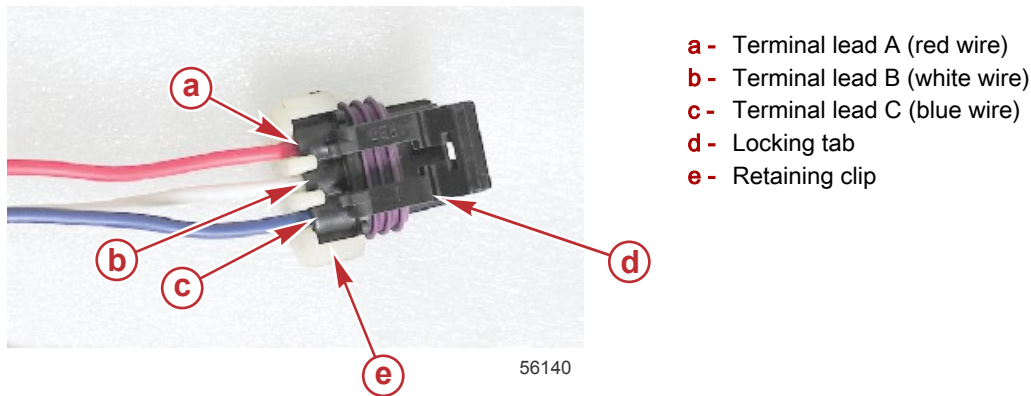
Trim sender position

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2. Route the sensor harness through the opening in the gimbal ring and secure with the clamp and screw.
3. Install the harness terminal leads into the harness terminal connector block of the trim position sensor as follows:
  - a. Insert the terminal lead "A" into the terminal lead marked "A" on the terminal connector. Push the terminal lead into the terminal block until the terminal lead clicks into place and cannot be pulled out.
  - b. Repeat step "a" for terminals "B" and "C" and ensure that all three terminals are securely locked.
  - c. Place the terminal lead retaining clip over the leads at the rear of the terminal connector block.
  - d. Push the retaining clip onto the terminal connector block until it snaps into place over the locking tabs located on either side of the terminal connector block.



4. Refer to the CDS G3 tool to set the ADC count to 205 counts with the drive in the full down position.

## Trim Tab Position Trim Sensor Removal

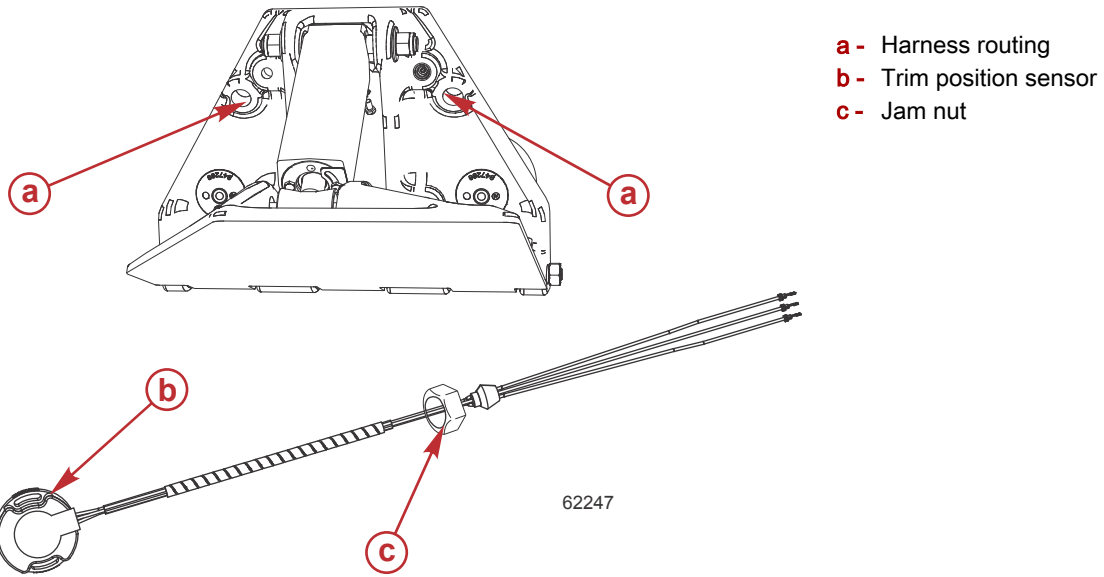
1. Disconnect the harness.

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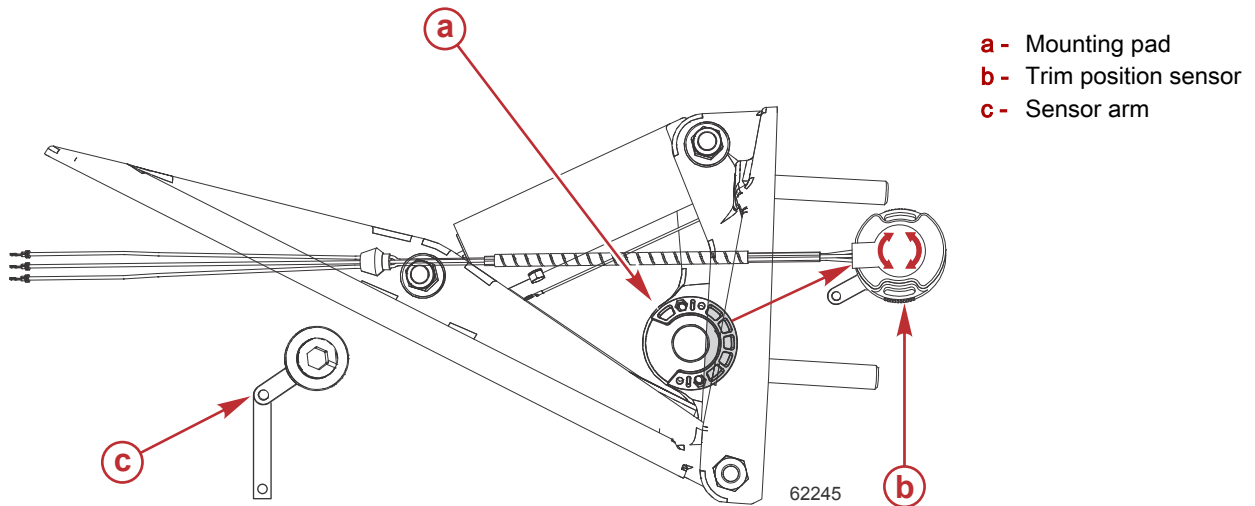
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2. Unscrew the jam nut securing the harness to the trim tab and remove the harness.



3. Remove the two screws from the trim position sensor and separate the sensor arm from the sensor.



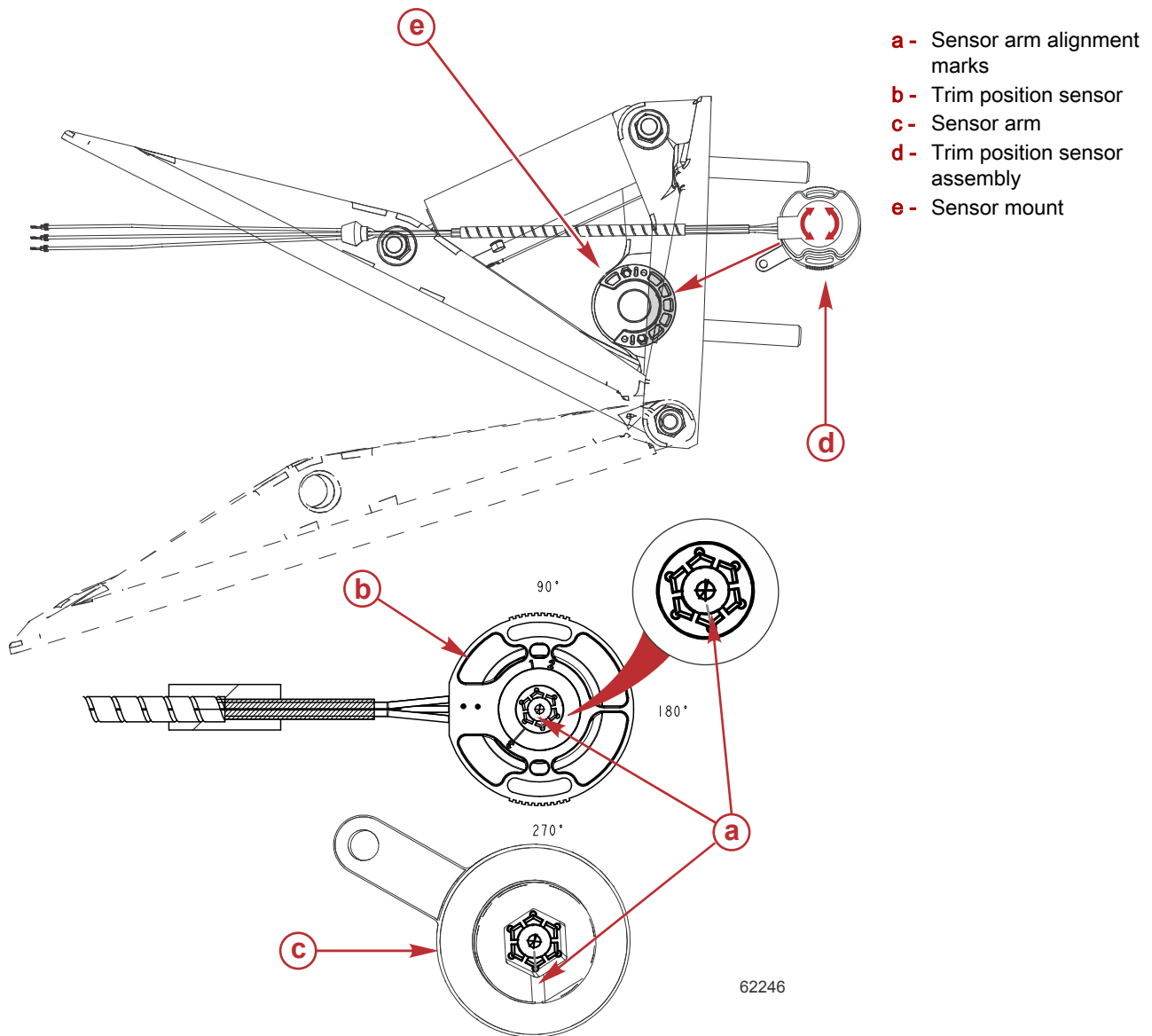
## Trim Tab Trim Position Sensor Installation

1. Assemble the arm and sensor with the light mark on the sensor center gear and the groove on the arm in alignment.

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2. Install the assembled sensor to the mounting fixture on the trim tab.

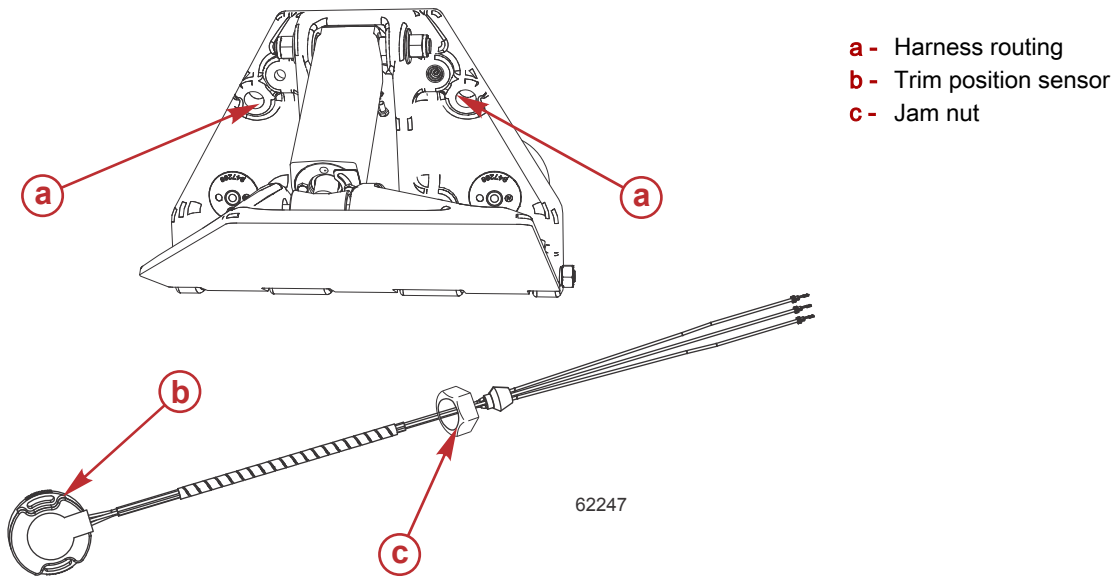


3. Insert the harness through the trim tab backing plate and install the jam nut.

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4. Connect the sensor to the engine harness.



5. Use the CDS G3 tool to set the ADC counts to 188 counts with the trim tab in the full down position.

## CDS and CDS G3 or AGI Applications

The following table lists CDS, CDS G3, or AGI applications.

Sterndrive Engine Type	CDS	CDS G3
Mercury Racing HP525, HP600, HP662, HP700	X	
Mercury Racing DTS engines		X
Trim tabs with an AGI	-	-
M8, Bravo XR, ITS drives used only with an AGI	-	-

## Checking Trim and Trailer Limits

Test the operation of the trim position sender by moving the drive through its full range of motion, using caution as it reaches the upper and lower limits. If the limits are outside the original specifications adjust the limits as follows.

## Setting Trim Limit with CDS G3

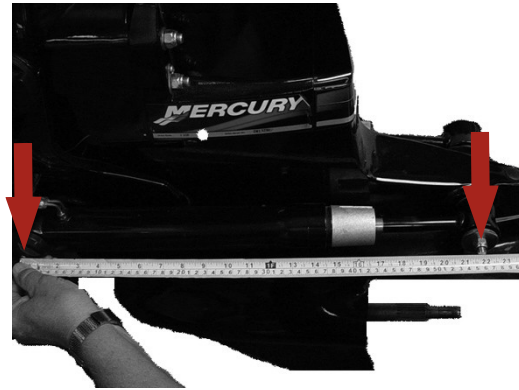
**NOTE:** Trim limiting will only occur when the engine RPM is greater than 3000 RPM and gear position is forward.

1. Connect the CDS G3 to the 10-pin SmartCraft connection either at the helm junction box, helm service port, or to the engine with the in-line termination adapter harness connector.
2. Turn the ignition key to the on position.
3. Select the appropriate engine set-up on the CDS G3.
4. Select **Diagnostics** and go to the **Set Trim Limit** screen.
5. Follow the directions on the screen.

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- When prompted to trim the drive to the desired position, measure the distance between anchor pin centers. This position should be 55.3 cm (21.75 in.) or less, except on the 4.5L Alpha model. 4.5L Alpha should measure 52.7 cm (20.75 in.) or less.



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Anchor pins

## Setting SmartCraft Gauges

To set the SmartCraft gauges, refer to the appropriate operator manual.

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