

Notice to Users of This Manual

Throughout this publication, warnings, cautions, and notices (accompanied by the International HAZARD Symbol ) are used to alert the mechanic to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. Observe them carefully!

These safety alerts alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the service, plus common sense operation, are major accident prevention measures.

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates a situation which, if not avoided, could result in engine or major component failure.

IMPORTANT: Identifies information essential to the successful completion of the task.

NOTE: Indicates information that helps in the understanding of a particular step or action.

This manual has been written and published by the Service Department of Mercury Marine to aid our dealers' mechanics and company service personnel when servicing the products described herein. We reserve the right to make changes to this manual without prior notification.

It is assumed that these personnel are familiar with marine product servicing procedures. Furthermore, it is assumed that they have been trained in the recommended service procedures of MotorGuide products, including the use of mechanics' common hand tools and the special MotorGuide or recommended tools from other suppliers.

We could not possibly know of and advise the marine trade of all conceivable procedures and of the possible hazards and/or results of each method. Therefore, when using a service procedure and/or tool that is not recommended by the manufacturer, be completely satisfied that neither your personal or product safety is endangered.

All information, illustrations, and specifications contained in this manual are based on the latest product information available at the time of publication. As required, revisions to this manual will be sent to all dealers contracted by us to sell and/or service these products.

Refer to dealer service bulletins, operation maintenance and warranty manuals, and installation manuals for other pertinent information concerning the products described in this manual.

Precautions

It should be kept in mind, while working on the product, that the electrical systems are capable of violent and damaging short circuits or severe electrical shocks. When performing any work where electrical terminals could possibly be grounded or touched by the mechanic, the battery cables should be disconnected at the battery.

During any maintenance procedure, replacement fasteners must have the same measurements and strength as those removed. Numbers on the heads of the metric bolts and on the surfaces of metric nuts indicate their strength. American bolts use radial lines for this purpose, while most American nuts do not have strength markings. Mismatched or incorrect fasteners can result in damage or malfunction, or possibly personal injury. Therefore, fasteners removed should be saved for reuse in the same locations whenever possible. Where the fasteners are not satisfactory for reuse, care should be taken to select a replacement that matches the original.

Replacement Parts

Use of parts other than the recommended service replacement parts will void the warranty on those parts that are damaged as a result.

WARNING

Performing service or maintenance without first disconnecting the battery can cause product damage, personal injury, or death due to fire, explosion, electrical shock, or unexpected motor starting. Always disconnect the battery cables from the battery before maintaining, servicing, installing, or removing motor components.

Cleanliness and Care of Product

A MotorGuide product is a combination of many machined, honed, polished, and lapped surfaces with tolerances measured in the ten-thousandths of an inch. When any product component is serviced, care and cleanliness are important. It should be understood that proper cleaning and protection of machined surfaces and friction areas is a part of the repair procedure. This is considered standard shop practice even if not specifically stated.

Whenever components are removed, they should be retained and marked for installation into their original locations. During the assembly process, the marked parts are quickly identified for installation into the same locations they were removed from.

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Manual Outline

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2 - Troubleshooting

- A - Troubleshooting

3 - Trolling Motor Disassembly and Assembly

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- E - Wire and Steering Rigging
- F - Steering System
- G - Lower Unit
- H - Mount

General Information

1

Troubleshooting

2

Trolling Motor Disassembly and
Assembly

3

General Information

Section 1A - General Information



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Lubricants, Sealants, Adhesives

| Description | Where Used | Part No. |
|-----------------------------------|----------------|--------------|
| Tour Latch Grease | Latch hooks | 8M4005246 |
| | Latch strikers | |
| 10W-30 4-Stroke Marine Engine Oil | Pivot pins | 92-8M0078625 |

Inspection and Maintenance Schedule

NOTICE

Neglecting to inspect, maintain, or repair the trolling motor can result in product damage. This product should be serviced only by individuals familiar with all applicable service and safety procedures.

Before Each Use

- Check the trolling motor for tightness on the deck mount.
- Check the tightness of the battery lead connections.
- Visually inspect for loose or corroded wiring connections.
- Visually inspect for worn or frayed stow/deploy cable and handle assembly.
- Check the tightness of the propeller nut.
- Check the propeller blades for damage.

After Each Use

- Disconnect the battery cables from the power source.
- Check the propeller and the propeller shaft for debris such as weeds and fishing line. Remove all debris.
- Rinse the trolling motor with clean water to remove dirt and dust that may scratch the surface.

Storage Preparation

The major consideration in preparing the trolling motor for storage is to protect it from corrosion and damage caused by freezing of trapped water.

Complete the appropriate care instructions to prepare the trolling motor for storage. Store the trolling motor in a dry location where it will not be affected by temperatures below -29 °C (-20 °F) and above 75 °C (167 °F).

IMPORTANT: Trolling motors stored in temperatures below 0 °C (32 °F) should be operated slowly for a minimum of 15 minutes before going above 30% operation.

Lubrication Points

NOTE: Preferred lubricants can be obtained at any authorized MotorGuide or Mercury Marine service center.

To reduce friction and quiet squeaks, lubricate the specified locations periodically with the following lubricants:

- Latch hooks - Tour Latch Grease

| Description | Where Used | Part No. |
|-------------------|-------------|-----------|
| Tour Latch Grease | Latch hooks | 8M4005246 |

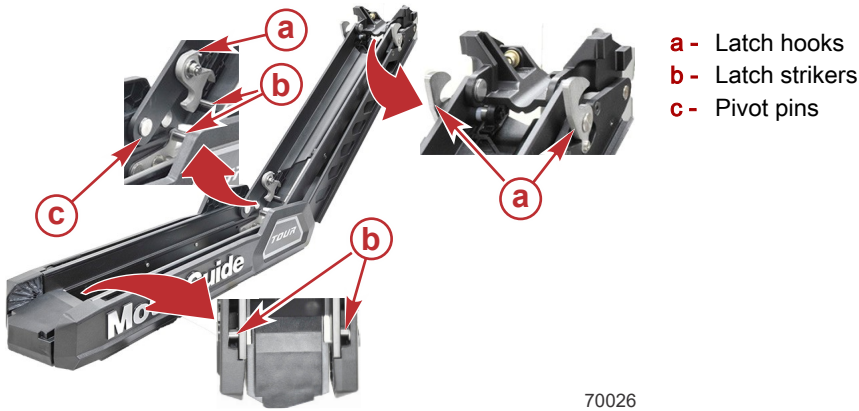
- Latch strikers - Tour Latch Grease

| Description | Where Used | Part No. |
|-------------------|----------------|-----------|
| Tour Latch Grease | Latch strikers | 8M4005246 |

- Pivot pins - 4-Stroke 10W-30 Outboard Oil

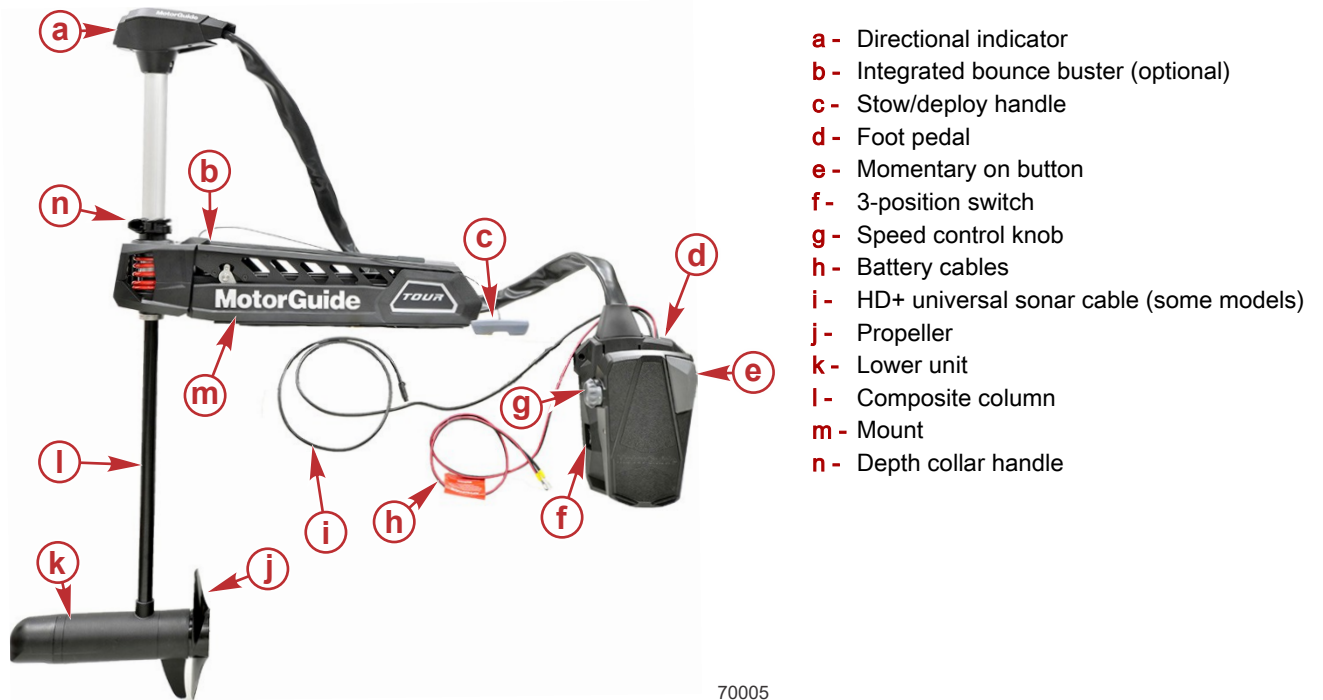
| Description | Where Used | Part No. |
|-----------------------------------|------------|--------------|
| 10W-30 4-Stroke Marine Engine Oil | Pivot pins | 92-8M0078625 |

IMPORTANT: Never use an aerosol lubricant to grease or oil any part of the unit. Many aerosol lubricants contain harmful propellants that can cause damage to various parts of the trolling motor.



70026

Tour 82/Tour 109 MotorGuide Trolling Motor



70005

Tour Pro 82/Tour Pro 109 MotorGuide Trolling Motor



- a - Top housing
- b - Depth collar handle
- c - Integrated bounce buster (optional)
- d - HD+ universal sonar cable (some models)
- e - Stow/deploy handle
- f - Speed control knob
- g - Foot pedal
- h - NMEA 2000 cable
- i - Momentary on button
- j - Anchor button
- k - Heading lock button
- l - Prop on button
- m - LED dashboard
- n - Battery cables
- o - Mount
- p - Propeller
- q - Lower unit
- r - Composite column

70275

Tour Pro Only

Pinpoint GPS Overview

Trolling Motor Installation Guidelines

This section covers important guidelines for the Tour Pro trolling motor. Refer to the following list of important considerations:

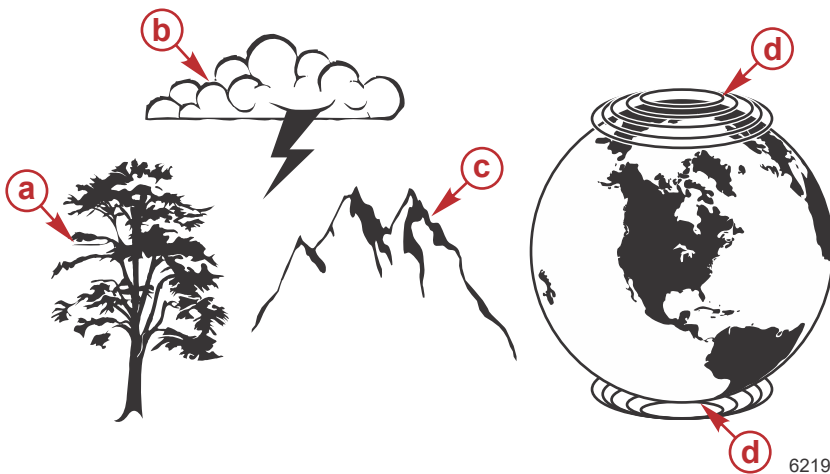
- Verify that objects containing iron (such as anchors) are not located within 91.4 cm (36 in.) of the trolling motor.
- Keep unnecessary wiring and power cables away from the trolling motor.
- Verify that the trolling motor power cables are bundled together. Do not route the power cables separately, particularly within 91.4 cm (36 in.) of the trolling motor. Routing the power cables together reduces electromagnetic interference.
- Obstructions such as mountain ranges, bridges, tall trees, buildings, and severe weather can affect the GPS signal strength.
- GPS signal strength can be affected by certain geographic locations, such as southern or northern polar extremes like Alaska and northern Canada.

⚠ CAUTION

Avoid injury or property damage due to unintended operation. Certain objects—especially magnetic metal objects, such as anchors—can affect the GPS system if they are within or passing through the magnetic field surrounding the trolling motor. Objects obstructing the GPS signal can also have a negative effect on system operation. Be mindful of objects close to the trolling motor, and use care when operating the trolling motor in a GPS-guided mode.

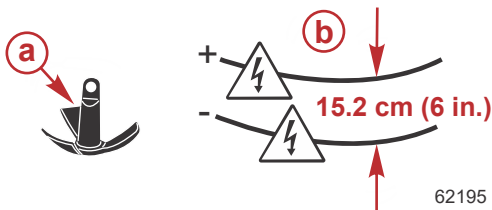
⚠ CAUTION

Avoid injury or property damage due to unintended operation. Objects restricting foot pedal movement and power assisted steering can have a negative affect on GPS-guided modes. Ensure that the foot pedal area is free and clear of obstructions and that the trolling motor can steer 360 degrees in both directions using the wireless remote before entering a GPS-guided mode. Be mindful of objects close to the trolling motor and foot pedal, and use care when operating the trolling motor in GPS-guided mode.



Objects and locations may obstruct the GPS signal

- a - Trees
- b - Severe weather
- c - Mountains
- d - Extreme Northern and Southern locations



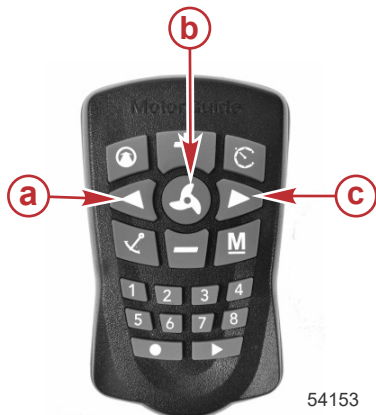
Objects may cause disturbance to the magnetic field within 91 cm (36 in.) of the trolling motor

- a - Objects containing iron (such as anchors)
- b - Trolling motor power cables (install no more than 15.2 cm [6 in.] apart)

Linking the Handheld Remote to the Trolling Motor

The first time the trolling motor is powered up, the handheld remote will need to be linked to the trolling motor. The linking procedure is listed as follows:

1. Deploy the trolling motor.
2. Starting with the positive (+) lead, connect the trolling motor power cables to the battery.
3. **Within ten seconds** after connecting the power cables, press and hold the **left arrow** button and **right arrow** button on the handheld remote at the same time. The trolling motor will emit a low tone to confirm that the handheld remote has been linked to the trolling motor.



- a - Left arrow button
- b - Propeller button
- c - Right arrow button

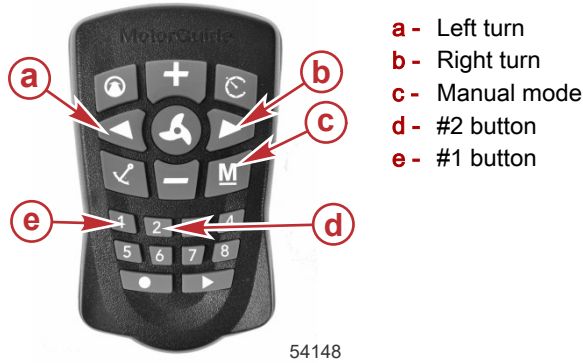
To clear the linked handheld from the trolling motor's memory, connect the battery cables to a power source such as the trolling motor battery or power receptacle, and in less than ten seconds press the **left arrow**, **right arrow**, and **propeller** buttons at the same time. Complete the link procedure again to use the handheld remote with the trolling motor.

General Information

If having trouble syncing the remote, start with the motor unplugged and deployed. Hold down the **left arrow**, **right arrow**, and **propeller** buttons at the same time before plugging in the motor. Once the battery light turns green, let go of the buttons and the link process should be complete.

Mounting Angle Calibration

IMPORTANT: This calibration is required and must be completed. It should be repeated when the trolling motor is moved from one boat to another. This calibration can be done with the boat in or out of the water.



IMPORTANT: A fixed GPS position is required to complete the mounting angle calibration. The Pinpoint GPS system will emit an audible tone once it has acquired a fixed GPS position (in the default audio mode), and the GPS status indicator light will illuminate on the LED dashboard located on the foot pedal.



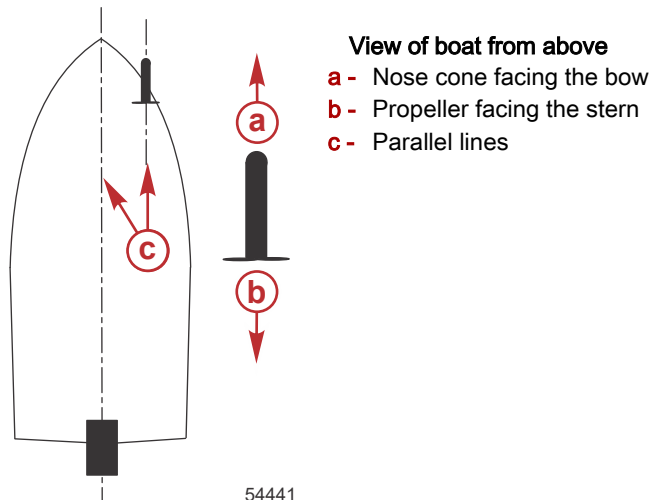
1. Power up and deploy the trolling motor. Adjust the motor height so that the bottom of the head is 15.2 cm (6 in.) above the depth collar and the motor is clear of any obstructions while turning.

IMPORTANT: Stay a safe distance away from the propeller when the trolling motor is in an operational mode.

⚠ WARNING

Rotating propellers can cause serious injury or death. Never start or operate the motor out of water.

2. Use the **left turn** and **right turn** buttons to steer the unit so that it is facing straight ahead, parallel with the keel of the boat, with the nose cone of the lower unit facing forward and the propeller facing aft.



3. Once the lower unit is positioned as close to parallel with the keel as possible, press and hold the **manual mode** button, then press and release the **1, 1**, then **2** buttons in sequence. The trolling motor will emit an audible tone, flash the status indicator light, and then return to manual mode, completing the mounting angle calibration.

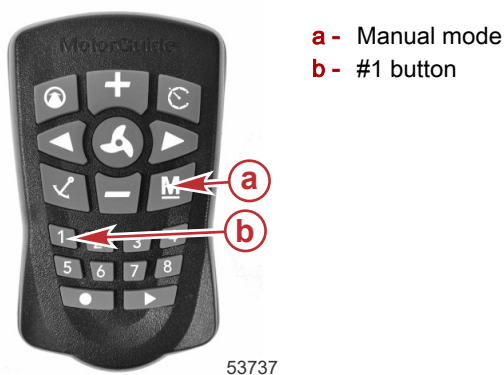
Compass Calibration

IMPORTANT: Calibration should not be completed using the trolling motor for propulsion as this could negatively impact GPS Pinpoint performance.

IMPORTANT: Calibration is critical to Pinpoint GPS performance and should be repeated three times at the time of installation. Compass calibration should be repeated if the Pinpoint GPS system is not performing as expected or if a long distance has been traveled from the last point of calibration. This calibration may be done with the boat in the water using the primary propulsion engine, or with the boat on the trailer.

IMPORTANT: A fixed GPS position is required to complete the compass calibration. The Pinpoint GPS system will emit an audible tone once it has acquired a fixed GPS position (in the default audio mode), and the GPS status indicator light will illuminate. Calibration cannot be completed using the trolling motor for propulsion as this could negatively impact GPS Pinpoint performance.

IMPORTANT: GPS signal strength may vary, depending on satellite reception. This can affect GPS performance.



1.
 - a. **If performing the compass calibration with the boat in the water:** locate a suitable area clear of obstructions to navigation (both above and below the waterline) to perform the compass calibration.
 - b. **If performing the compass calibration with the boat on the trailer:** locate a suitable area clear of obstructions to perform the compass calibration.
2. Deploy the trolling motor. Adjust the motor height so that the bottom of the head is 15.2 cm (6 in.) above the depth collar and the motor. If performing the compass calibration with the boat in the water, verify the location where the trolling motor and primary propulsion engine will not hit bottom or other obstructions.
3. Press and hold the **manual mode** button, then press **1, 1, 1**. The trolling motor will emit a long beep and the GPS status indicator light will turn off.
4.
 - a. **If performing the compass calibration with the boat in the water:** use the primary propulsion engine to slowly drive the boat in two complete circles.
 - b. **If performing the compass calibration with the boat on the trailer:** tow the boat in two complete circles.
5. Two beeps will occur when very close to completing the second circle. The GPS status indicator light will turn on and a beep will occur, signaling a successful compass calibration.
6. For initial installations repeat steps 1-5 two additional times to ensure motor is fully calibrated to the specific boat and geographic region.

Reset to Factory Calibration

To reset the trolling motor to the factory calibration, press and hold the **manual mode** button, then press **1, 1, 4**.

MotorGuide (M-Code) Chart

| M-code | Description |
|---|---|
| Hold <u>M</u> , Press X + X + X | |
| GPS calibrations | |
| 111 | Compass calibration |
| 112 | Mounting angle calibration |
| 113 | Calibration status |
| 114 | Reset to factory calibration |
| Audio modes | |
| 131 | Mode 1 (factory setting) |
| 132 | Mode 2 |
| 133 | Mode 3 |
| Clear stored GPS anchors/routes | |
| 121 | Clear stored anchors |
| 122 | Clear stored routes |
| Heading lock modes | |
| 211 | Heading lock, course mode (factory setting) |
| 212 | Heading lock, compass mode |
| Arrival modes | |
| 213 | Route arrival mode to manual (factory setting) |
| 214 | Route arrival mode to anchor |
| 215 | Route arrival mode to heading lock |
| Pinpoint modes (service center/retailer) | |
| 216 | Exit demo mode to normal operation (factory setting) |
| 217 | Enter demo mode |
| Foot pedal resistance settings | |
| 231 | Least resistance, light feel |
| 232 | Medium-light feel |
| 233 | Medium resistance, medium feel (factory setting) |
| 234 | Medium heavy feel |
| 235 | Most resistance, heavy feel |
| System software update | |
| 258 | Perform software update using dongle |
| System calibrations | |
| 283 | GPS center alignment calibration, sets Voltage to 24V or 36V unit |
| 284 | Foot pedal end-of-travel calibration and steering calibration |
| 285 | Steering sensor calibration |
| 286 | Clears voltage to unknown rather 24V or 36V unit |
| Diagnostics | |
| 287 | Enables power steering – Rev H & Newer Software |
| 288 | Disables power steering – Rev H & Newer Software |
| 888 | Toggle Diagnostics Mode On/Off – Rev H & Newer Software |

Adjusting the Steering Cable Tension—Tour Pro Only

WARNING

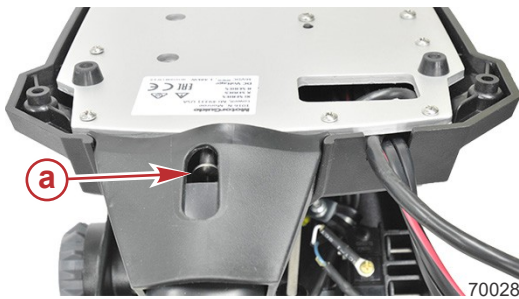
Neglecting to inspect, maintain, or repair your trolling motor can result in product damage or serious injury or death. Do not perform maintenance or service on your trolling motor if you are not familiar with the correct service and safety procedures.

The cable tension on the trolling motor is preset at the factory. With time and use, the cables may stretch slightly, requiring occasional adjustment. The following procedure explains how to adjust the steering cable tension.

Use care while adjusting the steering cable tension. Improper cable tension, whether too loose or too tight will cause poor operation of the GPS guided functions.

To adjust the foot pedal refer to **Tour Pro Pedal Resistance Settings**.

1. Remove the foot pedal from the boat deck if it has been secured with screws.
2. Adjust the cable tension by turning the cable tension screw clockwise to increase tension, and counterclockwise to decrease tension. Adjust the cable tension screw until there is 3.175 mm (0.125 in.) of play in the foot pedal pad while the motor is stowed.



Bottom of foot pedal
a - Cable tension screw

3. Use the remote to verify the cables have not been over-tensioned.
4. Place the foot pedal in a toe down position.
5. Hold the left arrow on the remote to rotate the unit counterclockwise until the foot pedal is heel down.
6. Hold the right arrow on the remote to rotate the unit clockwise until the foot pedal is toe down. The unit should smoothly rotate 360 degrees clockwise and counterclockwise without shuttering. If shuttering occurs, decrease cable tension.

IMPORTANT: Do this calibration where the motor will not hit the bottom of the body of water and the surrounding area is free of obstructions.

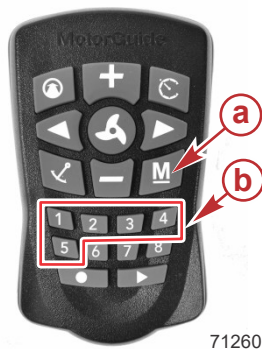
7. After adjustment of manual cable tension, power cycle the trolling motor and using the remote control complete a M284 foot pedal end-of-travel calibration. **Refer to Foot Pedal End-of-Travel Calibration.**

NOTE: The trolling motor will steer itself max toe down and max heel down during this calibration.

Tour Pro Pedal Resistance Settings

The user can manually adjust the pedal resistance to feel looser or tighter based on user preferences. Press and hold the Manual Mode button and press 2,3,1 for the lightest setting up to 2,3,5 which is the heaviest or most resistant setting. settings are 1 - 5.

- Setting 1: M, 2, 3, 1 - Least resistant, lighter feel.
- Setting 2: M, 2, 3, 2
- Setting 3: M, 2, 3, 3
- Setting 4: M, 2, 3, 4
- Setting 5: M, 2, 3, 5 - Most resistance, heavier feel.



a - Manual mode button
b - Buttons 1 - 5

Tour Only

Adjusting the Steering Cable Tension

⚠ WARNING

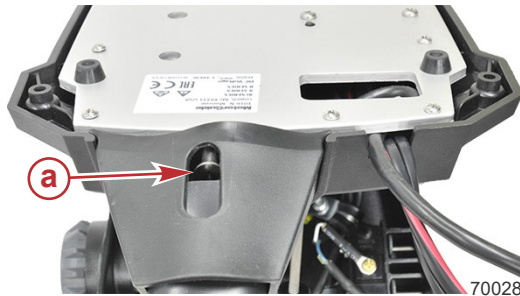
Neglecting to inspect, maintain, or repair your trolling motor can result in product damage or serious injury or death. Do not perform maintenance or service on your trolling motor if you are not familiar with the correct service and safety procedures.

The cable tension on the trolling motor is preset at the factory. With time and use, the steering cables may stretch slightly, requiring occasional adjustment. The following procedure explains how to adjust the steering cable tension.

Use care while adjusting the steering cable tension. Improper steering cable tension, whether too loose or too tight will cause premature steering cable wear and or loss of steering control.

1. Remove the foot pedal from the boat deck if it has been secured with screws.
2. Adjust the steering cable tension by turning the steering cable tension screw clockwise to increase tension, and counterclockwise to decrease tension. Adjust the steering cable tension screw to the specified torque value.

| Description | Nm | lb-in. | lb-ft |
|------------------------------|-----|--------|-------|
| Steering cable tension screw | 1.7 | 15 | – |



Bottom of foot pedal
a - Steering cable tension screw

Specifications Tour/Tour Pro

Specifications

| Model | Peak Thrust | Volts | Speeds Control/ Motor Direction | Integrated Sonar | Pinpoint GPS | Shaft Length |
|-------------------|-------------|-------|---------------------------------|------------------|--------------|-------------------|
| TR 82 45" | 82 | 24 V | Digital Variable/ Forward | No | No | 114.3 cm (45 in.) |
| TR 109 45" | 109 | 36 V | Digital Variable/ Forward | No | No | 114.3 cm (45 in.) |
| TR 82 45" HD+SNR | 82 | 24 V | Digital Variable/ Forward | Yes | No | 114.3 cm (45 in.) |
| TR 109 45" HD+SNR | 109 | 36 V | Digital Variable/ Forward | Yes | No | 114.3 cm (45 in.) |

Specifications

| Model | Peak Thrust | Volts | Speeds Control/ Motor Direction | Integrated Sonar | Pinpoint GPS | Shaft Length |
|-----------------------|-------------|-------|---------------------------------|------------------|--------------|-------------------|
| TR Pro 82 45" | 82 | 24 V | Digital Variable/ Forward | No | Yes | 114.3 cm (45 in.) |
| TR Pro 109 45" | 109 | 36 V | Digital Variable/ Forward | No | Yes | 114.3 cm (45 in.) |
| TR Pro 82 45" HD+SNR | 82 | 24 V | Digital Variable/ Forward | Yes | Yes | 114.3 cm (45 in.) |
| TR Pro 109 45" HD+SNR | 109 | 36 V | Digital Variable/ Forward | Yes | Yes | 114.3 cm (45 in.) |

General Information

Section 1B - Wiring and Battery Information



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Wiring and Battery Information

⚠ WARNING

An operating or charging battery produces gas that can ignite and explode, spraying out sulfuric acid, which can cause severe burns. Ventilate the area around the battery and wear protective equipment when handling or servicing batteries.

⚠ WARNING

Performing service or maintenance without first disconnecting the battery can cause product damage, personal injury, or death due to fire, explosion, electrical shock, or unexpected motor starting. Always disconnect the battery cables from the battery before maintaining, servicing, installing, or removing motor components.

Wire Color Code Abbreviations

| Wire Color Abbreviations | | | | |
|--------------------------|-------|--|------------|--------|
| BLK | Black | | BLU | Blue |
| BRN | Brown | | GRY or GRA | Gray |
| GRN | Green | | ORN or ORG | Orange |
| PNK | Pink | | PPL or PUR | Purple |
| RED | Red | | TAN | Tan |
| WHT | White | | YEL | Yellow |
| LT or LIT | Light | | DK or DRK | Dark |

Battery Inspection

The battery should be inspected at periodic intervals to ensure proper trolling motor operation.

IMPORTANT: Read the safety and maintenance instructions that accompany the battery.

Lithium batteries are equipped with their own internal battery management system set by the battery manufacturer. In cases where the trolling motor is showing symptoms of insufficient power or power loss, the Lithium battery should be tested to the manufacturer specifications. If the battery cannot be tested, replace it with a known good traditional lead acid/AGM marine battery (refer to **Wiring and Battery Information**), to isolate the issue between the trolling motor and its power supply source.

1. Ensure that the battery is secured to the boat.
2. Ensure that the battery cable terminals are clean, tight, and correctly installed. For installation instructions, refer to **Battery Connection**.
3. Ensure that the battery is in a battery box or has sufficient protection to safeguard against accidental shorting of the battery terminals.

Recommended Practice and Procedures

IMPORTANT: Unplug the trolling motor after each use and when charging the battery.

- Do not use the main engine battery to power the trolling motor.
- Ensure that the batteries are enclosed within a battery box to prevent accidental shorting of the battery terminals.
- Route the trolling motor wires on the opposite side of the boat from other boat wiring.
- Connect boat accessories directly to the main engine battery.
- Do not charge the trolling motor batteries while the trolling motor is in the deployed (down) position.

Battery Recommendations

- Use 12-volt, deep cycle marine batteries. The number of batteries required varies according to the model of your trolling motor. Refer to **Battery Connection**.
- As a general rule, deep cycle batteries with a higher amp-hour rating or reserve capacity rating will provide longer run times and better performance.

IMPORTANT: A circuit breaker purchased for use with the trolling motor must be suitable for isolation in accordance with IEC 60947-2. The circuit breaker shall be capable of being locked in the OFF position.

- Install a manual reset circuit breaker in line with the trolling motor positive leads within 180 cm (72 in.) of the batteries. These can be purchased from your local MotorGuide retailer or from www.motorguide.com.
- Do not extend the included 10 mm² (10-gauge) battery cables more than 1.8 m (6 ft) for a total of 3 m (10 ft). If longer battery cables are required, MotorGuide offers accessory 8 mm² (8-gauge) battery cables. If battery cables are ran longer than 4.88 m (16 ft), 6 mm² (6-gauge) gauge battery cables are recommended.

- Use nylock nuts to secure the battery cables to their terminals. Using wing nuts to secure the battery cables can cause loose connections.
- Any depth sounders or fish finders must be powered from the engine starting battery. Connecting electronic equipment to the trolling motor batteries can cause electrical interference and possible electrolysis.

| Recommended MotorGuide Accessory Description | Part Number |
|--|-------------|
| 8-gauge battery cable and terminals with 50-amp manual reset circuit breaker | MM309922T |
| 50-amp manual reset circuit breaker | MM5870 |
| 60-amp manual reset circuit breaker | 8M0064076 |

Battery Precautions

WARNING

An operating or charging battery produces gas that can ignite and explode, spraying out sulfuric acid, which can cause severe burns. Ventilate the area around the battery and wear protective equipment when handling or servicing batteries.

When charging batteries, an explosive gas mixture forms in each cell. Part of this gas escapes through holes in the vent plugs and may form an explosive atmosphere around the battery if ventilation is poor. This explosive gas may remain in or around the battery for several hours after it has been charged. Sparks or flames can ignite this gas and cause an internal explosion, which may shatter the battery.

The following precautions should be observed to prevent an explosion:

1. Do not smoke near batteries being charged or which have been charged very recently.
2. Do not break live circuits at terminals of batteries, because a spark usually occurs at the point where a live circuit is broken. Always be careful when connecting or disconnecting cable clamps on chargers. Poor connections are a common cause of electrical arcs which cause explosions.
3. Do not reverse polarity of battery terminal to cable connections.

Battery Cutoff Voltage

The battery cutoff voltage level is the voltage at which the trolling motor will not operate.

- 18-volt minimum cutoff for 24-volt systems.
- 27-volt minimum cutoff for 36-volt systems.

Overvoltage

CAUTION

Failure to operate the trolling motor within the recommended voltage specifications can cause product damage. Do not exceed the maximum supply voltage.

Overvoltage occurs when the voltage is raised above the motor's rated maximum supply voltage.

- 31-volt maximum for 24-volt systems.
- 48-volt maximum for 36-volt systems.

Battery Connection

WARNING

Before working around electrical system components, disconnect the battery cables from the battery to prevent injury or damage to the electrical system due to an accidental short circuit.

CAUTION

Disconnecting or connecting the battery cables in the incorrect order can cause injury from electrical shock or can damage the electrical system. Always disconnect the negative (-) battery cable first and connect it last.

NOTICE

Failure to operate the trolling motor within the recommended voltage specifications can cause product damage. Do not exceed the maximum supply voltage.

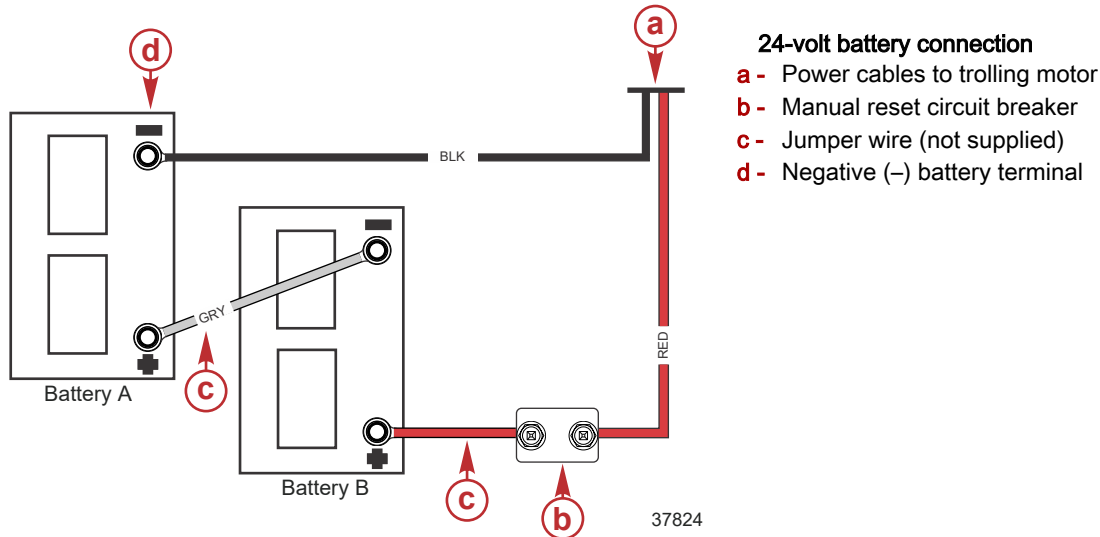
IMPORTANT: Refer to the decal on the head of the trolling motor to determine the voltage requirements of the trolling motor.

24-Volt Battery Connection

1. Starting with the negative (-) lead, disconnect the battery cables from the engine starting battery.
2. Install a 50-amp (good) or 60-amp (best) manual reset circuit breaker in line with the trolling motor power cable positive (+) lead and the trolling motor battery **B** positive (+) terminal.
3. Connect the positive (+) trolling motor lead to the positive (+) terminal on trolling motor battery **B**.
4. Connect a jumper wire (reference gray) between the negative (-) terminal on battery **B** to the positive (+) terminal on battery **A**.

IMPORTANT: The jumper wire should be the same wire gauge as the negative (-) and positive (+) power cables.

5. Connect the trolling motor negative (-) lead to the negative (-) terminal on battery **A**.
6. Starting with the positive (+) lead, reconnect the battery cables to the engine starting battery.



IMPORTANT: Do not connect a common ground bond cable between 24-volt and 12-volt electrical circuits.

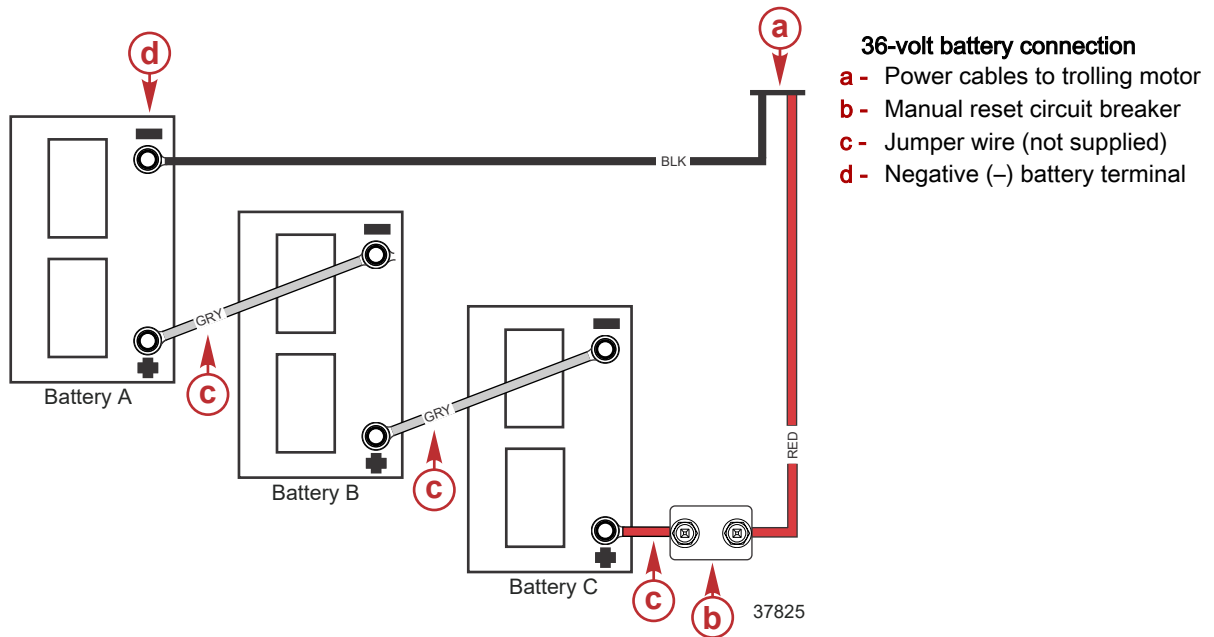
36-Volt Battery Connection

1. Starting with the negative (-) lead, disconnect the battery cables from the engine starting battery.
2. Install a 50-amp (good) or 60-amp (best) manual reset circuit breaker in line with the trolling motor power cable positive (+) lead and the trolling motor battery **C** positive (+) terminal.
3. Connect the positive (+) trolling motor lead to the positive (+) terminal on trolling motor battery **C**.
4. Connect a jumper wire (reference gray) between the negative (-) terminal on battery **C** to the positive (+) terminal on battery **B**.

IMPORTANT: The jumper wire should be the same wire gauge as the negative (-) and positive (+) power cables.

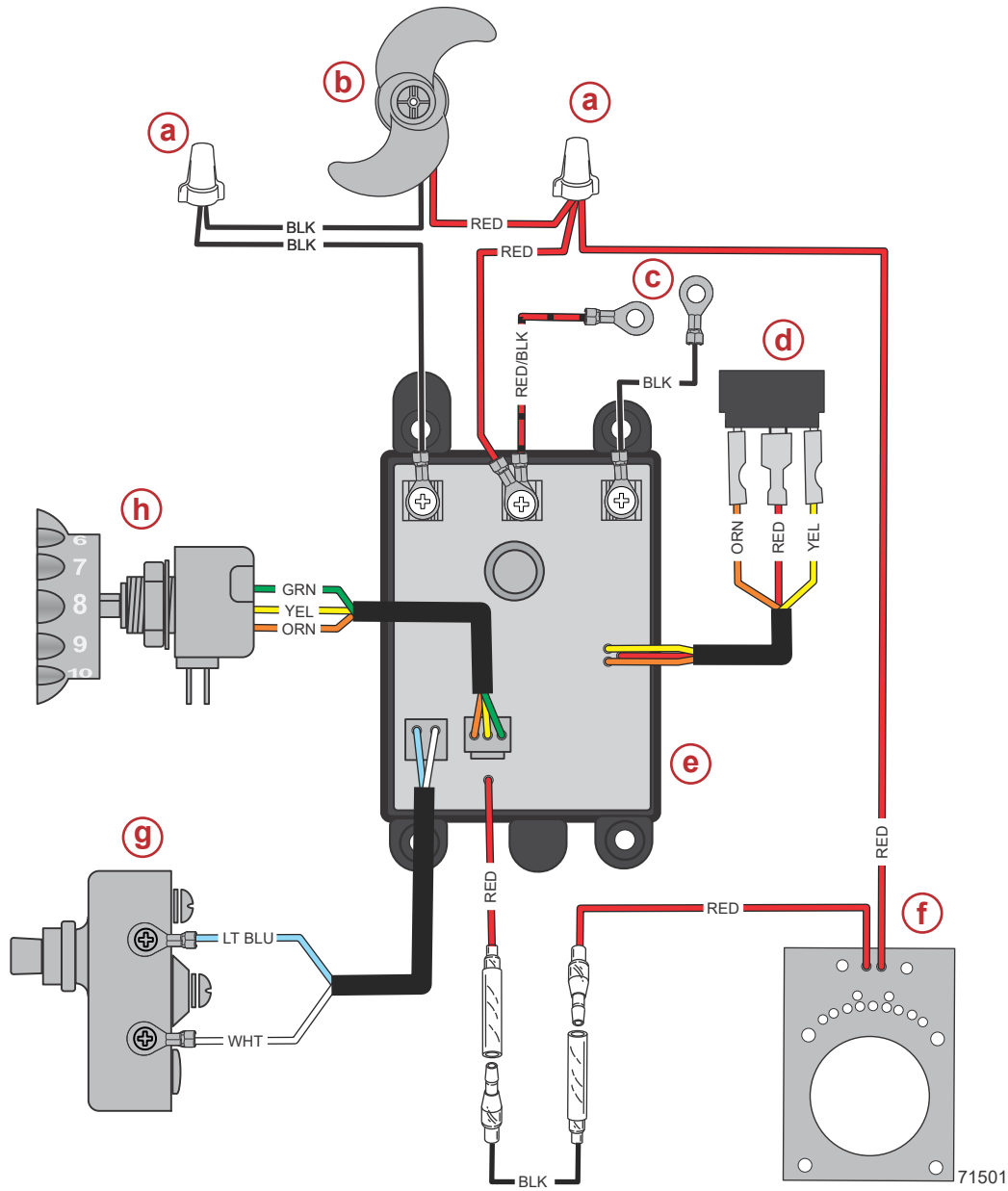
5. Connect a jumper wire (reference gray) between the negative (-) terminal on battery **B** to the positive (+) terminal on battery **A**.
6. Connect the trolling motor negative (-) lead to the negative (-) terminal on battery **A**.

7. Starting with the positive (+) lead, reconnect the battery cables to the engine starting battery.



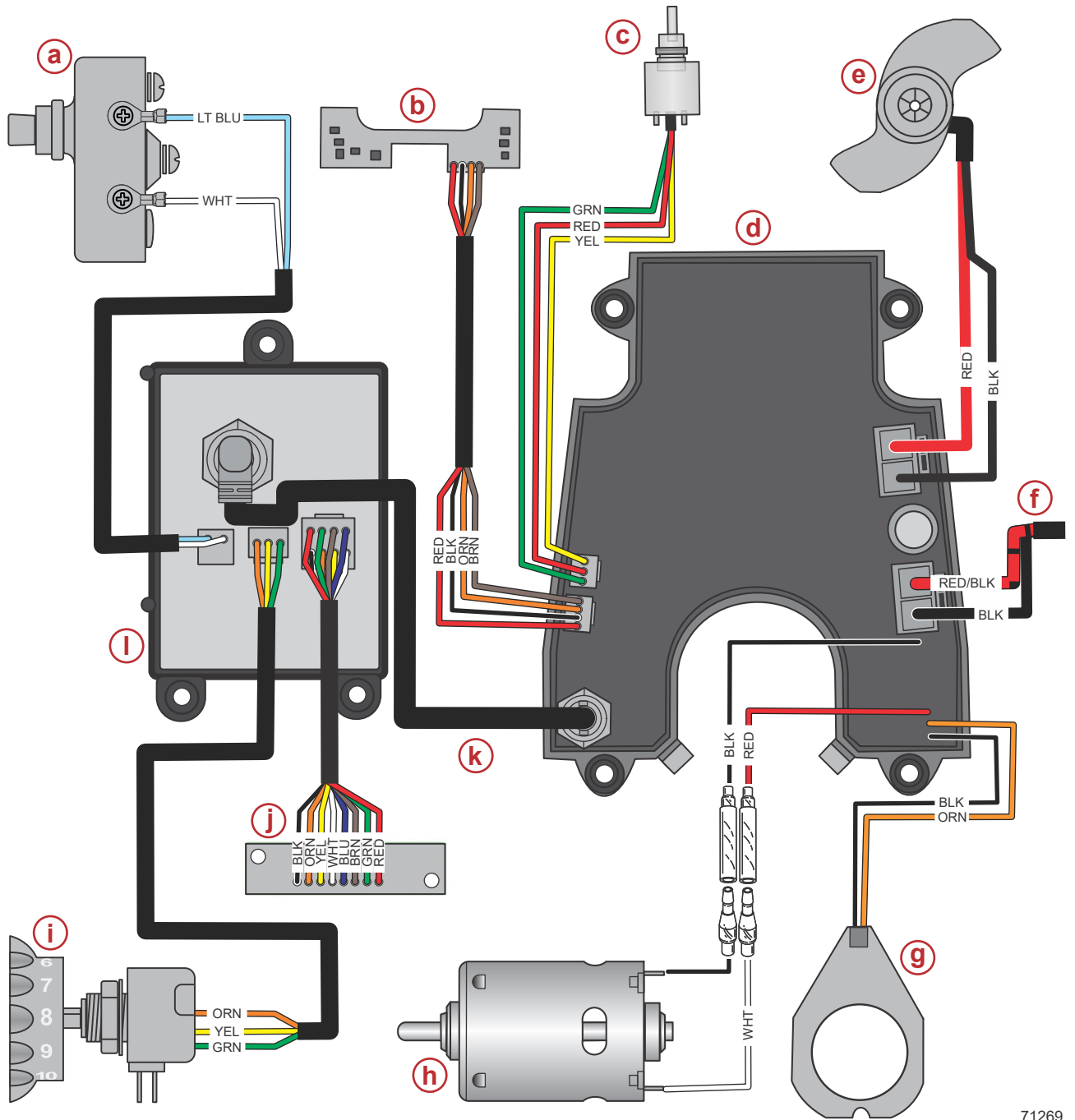
IMPORTANT: Do not connect a common ground bond cable between 36-volt and 12-volt electrical circuits.

Wiring Diagram—Tour



- a - Connectors—inside top housing
- b - Lower unit
- c - Battery cables
- d - Digital speed control module
- e - Control board
- f - Directional arrow light
- g - Momentary switch
- h - Speed control switch

Wiring Diagram—Tour Pro

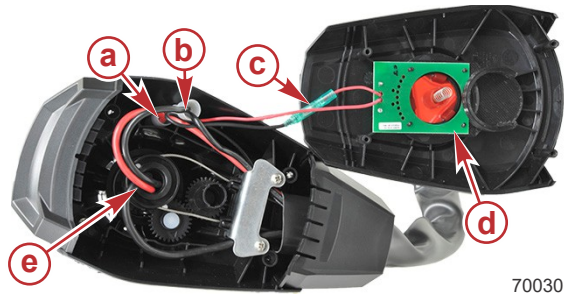


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- a** - Momentary switch
- b** - Sensor module board
- c** - Encoder
- d** - Main controller board
- e** - Lower unit
- f** - Battery cables
- g** - Indicator
- h** - Steering motor
- i** - Speed knob/potentiometer
- j** - Foot pedal LED board
- k** - Communications cable

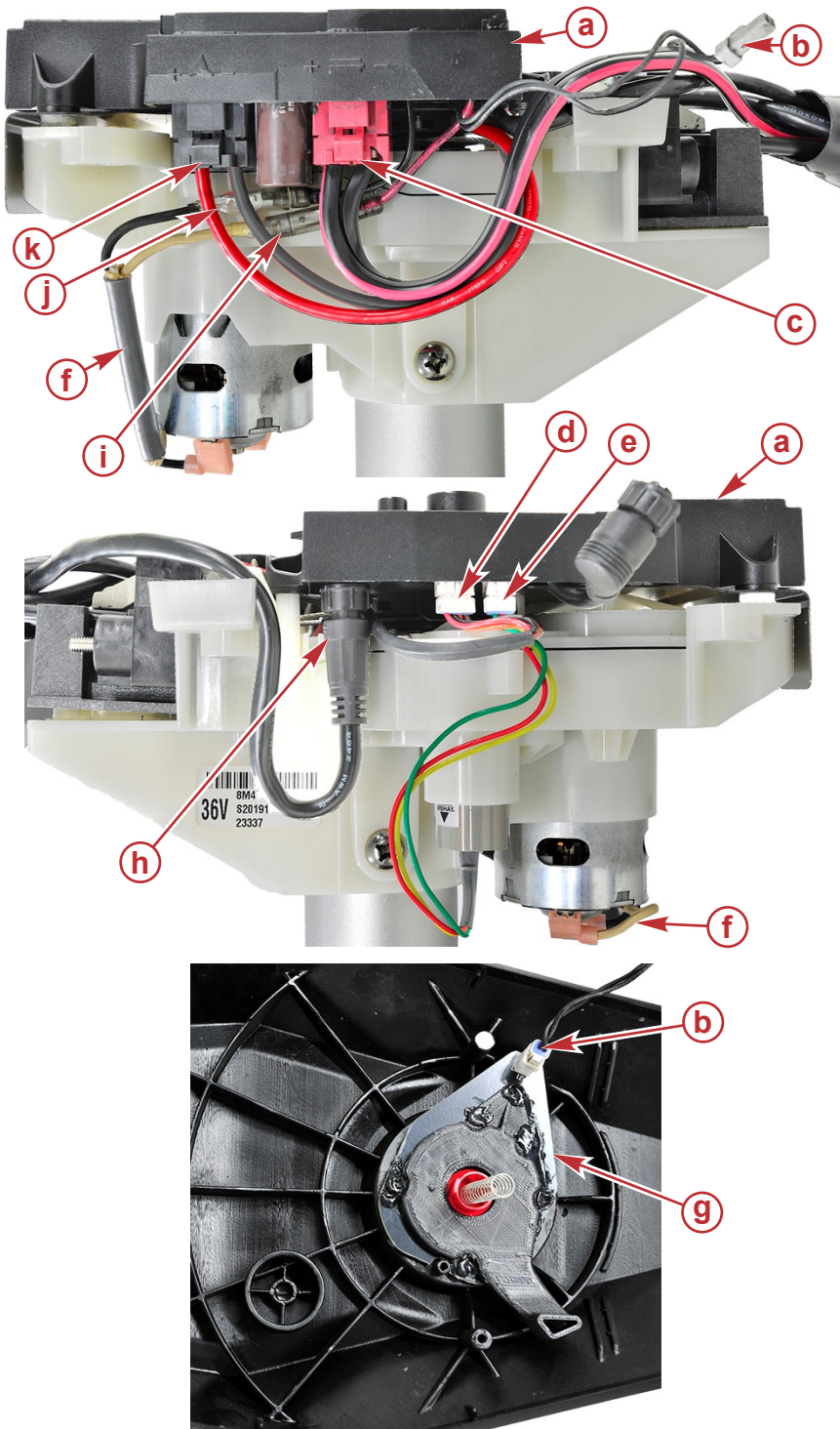
I - Foot pedal control board

Head Cover Assembly Wiring—Tour



- a** - Red (+) wiring connection
- b** - Black (-) wiring connection
- c** - Bullet connector
- d** - Directional arrow light
- e** - Motor wires to lower unit

Head Cover Assembly Wiring—Tour Pro



- a** - Main control board
- b** - Indicator connector
- c** - Battery cable connector
- d** - Sensor module connector
- e** - Encoder connector
- f** - Steering motor wires
- g** - Indicator
- h** - Communications cable connector
- i** - Bullet connector
- j** - Bullet connector
- k** - Lower unit connector

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Notes:

Troubleshooting

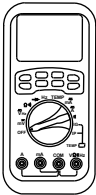
Section 2A - Troubleshooting

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A**

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Special Tools

| | |
|---|---|
| DMT 2004 Digital Multimeter | 91-892647A01 |
|  <p>4516</p> | <p>Measures RPM on spark ignition (SI) engines, ohms, amperes, AC and DC voltages; records maximums and minimums simultaneously, and accurately reads in high RFI environments.</p> |

Troubleshooting Guide

| Symptom | Possible Cause | Resolution |
|-----------------------------|---|--|
| Loss of power. | Propeller is loose. Propeller is damaged, or off balance. | Tighten the propeller nut. If the propeller is damaged or off balance, replace it. |
| | Incorrect supply voltage. | Check the power supply for proper voltage. For battery voltage cutoff and overvoltage information. Refer to Section 1B - Wiring and Battery Information . |
| | Weak battery. | Load test the battery. Check for faulty wiring, reversed polarity, or other battery issues. Repair or replace defective components. Refer to Section 1B - Wiring and Battery Information . |
| | Loose or corroded battery connections or circuit breaker. | Refer to the safety and maintenance instructions that accompany the battery. Refer to Section 1B - Wiring and Battery Information . |
| | Wiring or electrical connection is faulty from the boat to the trolling motor. | Confirm wire gauge from the battery to the trolling motor is insufficient. Six-gauge wire is recommended. |
| | Wiring or electrical connection is faulty from the power supply to the control board. | Check the battery lead connections for damage. Replace the top housing if necessary. |
| | Wiring damage inside the column. | Inspect motor control wires for damage. Replace the lower unit if necessary. |
| | Internal wiring or electrical connection. | <p>Remove the top housing and connect the motor control wires to the proper power supply. Refer to Section 1B - Battery Cutoff Voltage for minimum voltage requirements.</p> <p>If the motor works, replace the speed knob potentiometer in the foot pedal.</p> <p>If the motor does not work, the wires could be damaged. Recrimp the wires. If the motor still does not work, replace the lower unit.</p> |
| | Weeds, fishing line, or debris wrapped around the propeller. | Remove weeds, fishing line, or debris from the propeller. |
| Excessive noise, vibration. | Propeller is loose. Propeller is damaged, or off balance. | Tighten the propeller nut. If the propeller is damaged or off balance, replace it. |
| | Bent armature shaft. | Replace the armature or the lower unit as necessary. |

| Symptom | Possible Cause | Resolution |
|--|--|---|
| <p>Motor failure. Motor does not run. Motor runs at full speed only. Motor does not turn off .</p> | Incorrect supply voltage. | Check the power supply for proper voltage. For battery voltage cutoff and overvoltage information, refer to Section 1B - Wiring and Battery Information . |
| | Weak battery. | Check for faulty wiring, corrosion, reversed battery polarity, or other battery issues. Repair or replace defective components. |
| | Loose or corroded battery connections. | Refer to the safety and maintenance instructions that accompany your battery. |
| | Reverse polarity. | Reverse battery connections. Refer to Section 1B - Battery Connection for the correct wiring diagram. |
| | Internal wiring or electrical connection. | Remove the top housing and connect the motor control wires to the proper power supply to verify. Refer to Section 1B - Battery Cutoff Voltage for minimum voltage requirements. |
| | | If the motor works, replace the speed knob and potentiometer harness kit in the foot pedal. If the motor does not work, the wires could be damaged. Crimp the wires. If the motor still does not work, replace the lower unit. |
| | Fuse or circuit breaker is open. | Locate and correct the cause of the overload. Then replace the fuse or reset the circuit breaker. |
| Propeller is loose. Propeller is damaged, or off balance. | Tighten the propeller nut. If the propeller is damaged or off balance, replace it. | |
| Speed adjustment failure. | Internal wiring or electrical connection. | Remove the top housing and connect the motor control wires to the proper power supply to verify. Refer to Section 1B - Battery Cutoff Voltage for minimum voltage requirements. |
| | | If the motor works, replace the speed knob and potentiometer harness kit in the foot pedal. |
| | | If the motor does not work, the wires could be damaged. Crimp the wires. If the motor still does not work, replace the lower unit. |
| Hard to steer. | Motor column is bent. | Replace the motor column. |
| | Tension collar is overtightened. | Loosen the tension collar. |
| | Tour Pro Only – Steering sensor module damaged. | Inspect steering sensor module for deformation. Replace defective components. |
| | Tour Pro only – Transmission damage | Power-off the trolling motor and steer the system using the foot pedal. Signs of popping or binding should have the transmission replaced. |
| | Tour Pro only – Steering cables are twisted or over tension. | Refer to Check For Properly Adjusted Cable Tension . |
| Motor loss of power at end-of-travel of foot pedal. | Internal wiring or electrical connection. | Replace the momentary switch kit in the foot pedal. |
| Tour Pro only – Excessive noise while steering, loss of power steering. | Transmission failure. | Replace the transmission. |
| Tour Pro only —Erratic Steering with foot pedal. | Overtightened steering cables | Loosen the cable tension screw. If erratic steering continues, calibrate the pressure sensor (M285). |

| Symptom | Possible Cause | Resolution |
|--|--|---|
| Tour Pro only —Erratic Steering with remote. | Twisted foot pedal cable. | Rotate foot pedal 360 degrees to untwist steering cables. |
| | Overtightened steering cables. | Adjust the Cable tension. Refer to Check for Properly Adjusted Cable Tension . If erratic steering continues, calibrate the pressure sensor (M285). |
| Tour Pro only - Erratic GPS anchor. Tour Pro only - Erratic heading lock performance. | Improper GPS/control board installation calibration. | Perform a compass calibration (M111) and mounting angle calibration (M112). Refer to the 1A - Pinpoint GPS Overview . |
| | Degraded GPS/control board factory or service calibration. | Perform a factory center alignment calibration (M283). If erratic performance continues, inspect the manual cable tension and layout by rotating the lower unit using the pinpoint remote from max heel to max toe and back. If shuddering occurs, adjust cable tension and remove cable twist if present. Then complete foot pedal end of travel calibration (M284). (M284). Refer to section 3B - GPS/Control Board Calibration—Tour Pro . |
| | Restricted foot pedal or overtightened steering cables. | Inspect the foot pedal for obstructions. Adjust the Cable tension. Refer to Check for Properly Adjusted Cable Tension . |
| Tour Pro only - Loss of GPS Signal | GPS lost satellite communication. | Power the unit. Remove power from unit, wait 20 seconds, apply power to unit. GPS signal will take 2-5 minutes to reacquire satellites with a clear view of the sky. If GPS is not acquired in less than 5 minutes after a power cycle replace the GPS/Control Board. Refer to Section 3B - GPS/Control Board Removal, Wire Disconnection—Tour Pro and Section 3B - GPS/Control Board Installation, Wire Connection—Tour Pro . |
| Motor will not maintain depth. | Depth collar failure. | Replace the depth collar. |
| Top housing rotates on column. | Bolts or nuts are seized, loose, or defective. | Replace the necessary part and torque to specification. |
| Difficulty removing propeller. | Bent propeller pin. | Hold one blade and lightly tap the opposite blade with a rubber mallet. Use a putty knife on both sides of the propeller to apply equal pressure. Replace the lower unit. |
| | Bent armature shaft. | |
| Mount bracket squeaks. | Stow/deploy latching system need lubrication. | Refer to 1A - Lubrication Points . |
| | Steering system screws have loosened | Tighten steering system screws. Refer to Installing the Steering System on the Mount . |
| Mount binds when attempting to stow or deploy unit. | Dirt/debris buildup on latches or strikers. | Carefully clean and reapply grease to all latches and striker locations. Refer to the 1A - Lubrication Points . |

Check the Tour Pro Electrical Components

Electrical Component Troubleshooting (Tour Pro Only)

| Symptom | Possible Cause | Resolution |
|---------|----------------|------------|
|---------|----------------|------------|

| | | |
|---|--------------------------|--|
| No Power and power up beep not heard. | Battery cable issue | Check the battery cable for power. Refer to Check the Battery Cables. |
| | GPS/Control board issue | Refer to Check the GPS/Control board for foot pedal power and communications. |
| Indicator does not turn on. | Indicator board issue | Refer to Check the GPS/Control board for indicator power. |
| | GPS/Control board issue | |
| Foot pedal has no function (no LED, no constant-on, no anchor, no momentary, no speed control). | GPS/Control board issue | Refer to Check the GPS/Control board for foot pedal power and communications |
| | Communications cable | Refer to Check the GPS/Control board for foot pedal power and communications |
| | Foot pedal control board | Refer to Check the foot pedal control board for power. |
| Momentary switch inoperable and the rest of the foot pedal works. | Momentary switch | Refer to Check the momentary switch. |
| | Foot pedal control board | Refer to Check the foot pedal control board for power. |
| Speed knob inoperable and the rest of the foot pedal works. | Speed knob | Refer to Check the speed knob. |
| | Foot pedal control board | Refer to Check the foot pedal control board for power. |
| Constant-on inoperable and the rest of the foot pedal works. | Alignment | Check for button alignment and obstructions. |
| | Magnet | Refer to Check for prop on magnet. |
| | Foot pedal control board | Refer to Check the foot pedal control board for power. |
| | Foot pedal LED board | Refer to Check the foot pedal LED board for power. |
| Anchor or Heading Lock button inoperable and the rest of the foot pedal works. | Alignment | Check for button alignment and obstructions. A wire may be preventing the button from actuating. |
| | Magnet | Refer to Check for anchor and heading lock magnet. |
| | Foot pedal control board | Refer to Check the foot pedal control board for power. |
| Foot pedal LEDs do not turn on and at least one other foot pedal button does work. | Foot pedal control board | Refer to Check the foot pedal control board for power. |
| | Foot pedal LED board | Refer to Check the foot pedal LED board for power. |
| No NMEA 2000 and the rest of the system is working. | Sanity check NMEA 2000. | Power-on and connect the update dongle and verify that the dongle LED changes from blue to white. If no LED is illuminated the issue is outside the Tour Pro. If the LED remains white, inspect the Tour Pro foot pedal control board and NMEA 2000 cable for damage. |
| | Foot pedal control board | Refer to Check the foot pedal control board for power. |
| | GPS/Control board issue | Refer to Check the GPS/Control board for foot pedal power and communications |
| | Communications cable | Refer to Check the communications cable for foot pedal power and communications. |
| Pinpoint is not available. | GPS/Control board issue | If Pinpoint does not establish a GPS connection in six minutes of unobstructed satellite view then replace the GPS/Control board. Refer to Section 3B - GPS/Control Board Removal, Wire Disconnection—Tour Pro and Section 3B - GPS/Control Board Installation, Wire Connection—Tour Pro |

Troubleshooting

| | | |
|--|--|--|
| Pinpoint direction is incorrect by same amount in all directions. Jog left and right is not perpendicular to the boat. | Show center calibration | If diagnostic mode has been entered then press the cruise control button to power the Indicator and continue with the next step, otherwise enter M888 diagnostic mode. |
| | Center calibration not set | Refer to GPS Center Alignment Calibration . |
| | Show keel calibration | If diagnostic mode has been entered then press the heading lock button to power the Indicator and continue with the next step, otherwise enter M888 diagnostic mode. |
| | Keel calibration not set | Refer to Mounting Angle Alignment Calibration |
| Pinpoint seems confused, cannot hold anchor location. | Check compass calibration | If diagnostic mode has been entered then press the number 8 button to power the Indicator and continue with the next step, otherwise enter M888 diagnostic mode. |
| | Calibrate the compass | Refer to Pinpoint GPS Overview . |
| | Restricted foot pedal or overly tensioned steering cables. | Inspect the foot pedal for obstructions. Adjust the Cable tension. Refer to Check for Properly Adjusted Cable Tension . |
| Thrust motor shows no signs of life. | GPS/Control board issue | Refer to Check the GPS/Control board for Thrust motor voltage . |
| | Lower unit | Refer to Lower Unit Disassembly . |
| Foot pedal toe and heel are sensitive or require different amount of pressure to steer. | Pressure sensor not calibrated correctly | Foot pedal end-of-travel calibration and sensor module calibration (M284 and M285). |
| No power assist steering or power steering in only one direction. | Steering motor not working | Refer to Check the steering motor . |
| | GPS/Control board issue | Refer to Check the GPS/Control board for steering motor voltage . |
| | Encoder issue | Refer to Check the encoder . |
| | Sensor board module | Refer to Check the sensor board module . |
| Remote issue | Remote or main control board | Try a known good remote. If it works then replace the main control board. If it does not work then replace the remote control. |

Check the Top Housing

- Disassemble the top housing. Refer to **Section 3B - Top Housing Disassembly – Tour Pro**.
IMPORTANT: Do not disconnect the wiring.
- Remove the four screws and GPS/Control board unit from the transmission.
- Plug in the Tour Pro and check that the voltage is battery voltage. If it is not, then the issue is outside of the Tour Pro.
IMPORTANT: For personal safety
- If the unit has power, press M888 on the remote control to enter diagnostic mode. This will prevent the shaft and prop from rotating when the GPS/Control board is moved. When the GPS/Control board moves it can active the stow procedure.
- Assemble the top housing. Refer to **Section 3B - Top Housing Assembly – Tour Pro**.

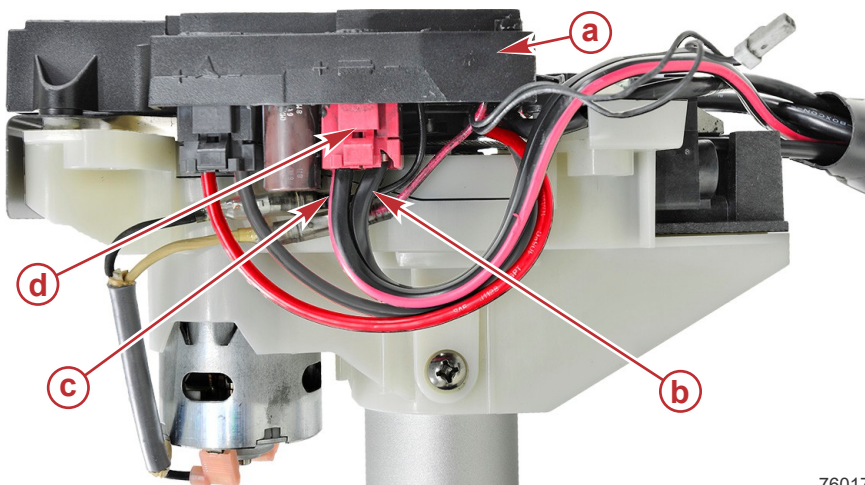
Check the Foot Pedal

- Disassemble the foot pedal. Refer to **Section 3D - Foot Pedal Disassembly**.
IMPORTANT: For personal safety
- If the unit has power, press M888 to enter diagnostic mode. This will prevent the shaft and prop from rotating when the GPS/Control board is moved. When the GPS/Control board moves it can active the stow procedure.
- Assemble the foot pedal. Refer to **Section 3D - Foot Pedal Assembly**.

Check the Battery Cables

- Disassemble the top housing. Refer to **Section 3B - Top Housing Disassembly – Tour Pro**.
- Disconnect the battery cable from the GPS/Control board.
- Check the voltage from the black/red wire to black wire on the battery cable.

4. If the battery cable voltage is zero, replace the battery cable.
5. If the battery cable is equal to the battery supply voltage, then the cable is good.
6. Connect the battery cable to the GPS/Control board.



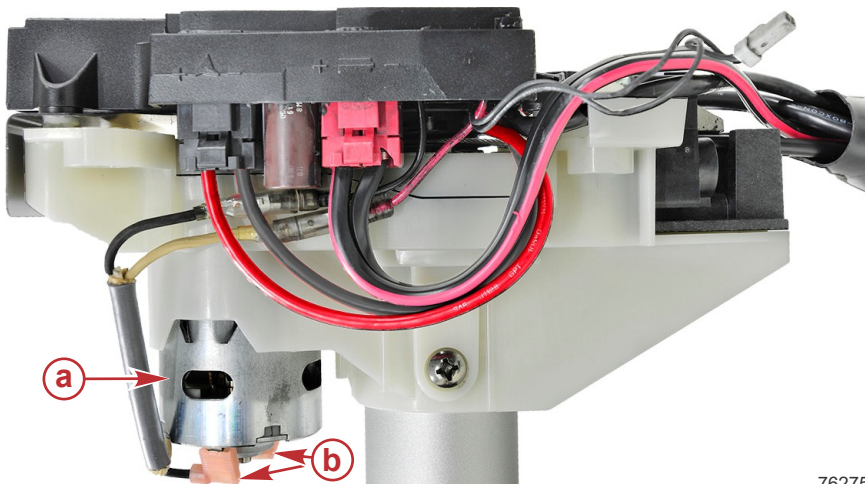
- a - GPS/Control board
- b - Black wire
- c - Black/red wire
- d - Battery cable

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7. Assemble the top housing. Refer to **Section 3B - Top Housing Assembly – Tour Pro.**

Check the Steering Motor

1. Disassemble the top housing. Refer to **Section 3B - Top Housing Disassembly – Tour Pro.**
2. If the remote is functional other than steering, attempt to steer using the remote control. If it steers in both directions, then the steering motor is good.
3. If it does not steer in both directions with the remote then check that power cables between the GPS/Control board and the steering motor are firmly connected and test the steering motor using the remote control again.
4. If the system is only steering in one direction but not the other, make sure insulated slip-on power connections to the steering motor are firmly connected.



- a - Steering motor
- b - Insulated slip-on connectors

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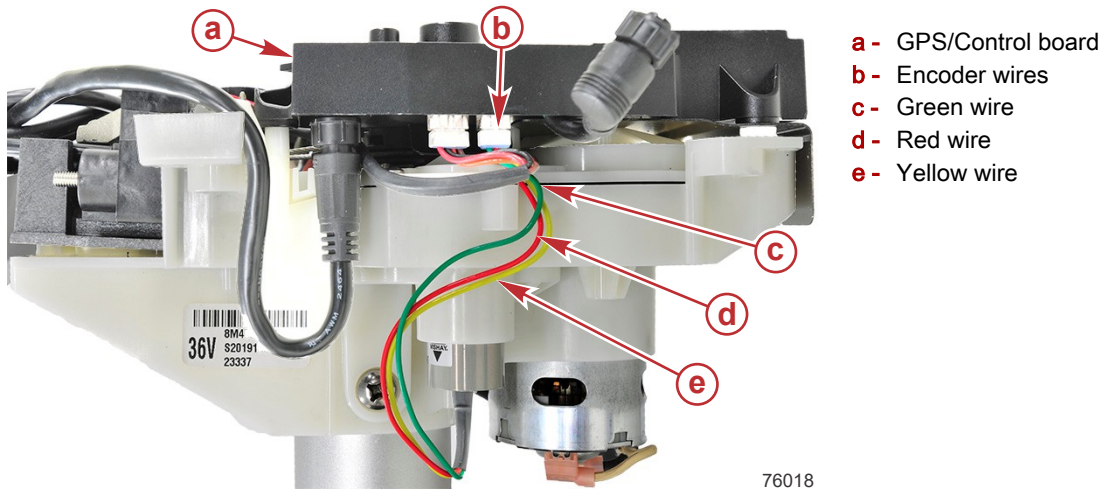
5. Test the steering motor using the remote control.
6. Assemble the top housing. Refer to **Section 3B - Top Housing Assembly – Tour Pro.**

Check the Encoder

1. Disassemble the top housing. Refer to **Section 3B - Top Housing Disassembly – Tour Pro.**
2. Disconnect the encoder wires from the GPS/Control board.
3. Apply five volts to the green wire and ground the yellow wire.
4. Using a voltmeter, read the voltage from the red wire to yellow wire.

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91-892647A01



5. Rotate the shaft until the foot pedal is completely in the heel down position.



6. Using a voltmeter, read the voltage from the red wire to yellow wire. It should be closer to ground than five volts.

DMT 2004 Digital Multimeter

91-892647A01

7. Rotate the shaft until the foot pedal is halfway to the toe down position.



8. Using a voltmeter, read the voltage from the red wire to yellow wire. It should be closer to ground than five volts. It should be higher than the previous reading, somewhere in the middle of ground and five volts.

| | |
|-----------------------------|--------------|
| DMT 2004 Digital Multimeter | 91-892647A01 |
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- Rotate the shaft until the foot pedal is completely in the heel down position.



- Using a voltmeter, read the voltage from the red wire to yellow wire. It should be higher than the previous reading, closer to five volts than ground.

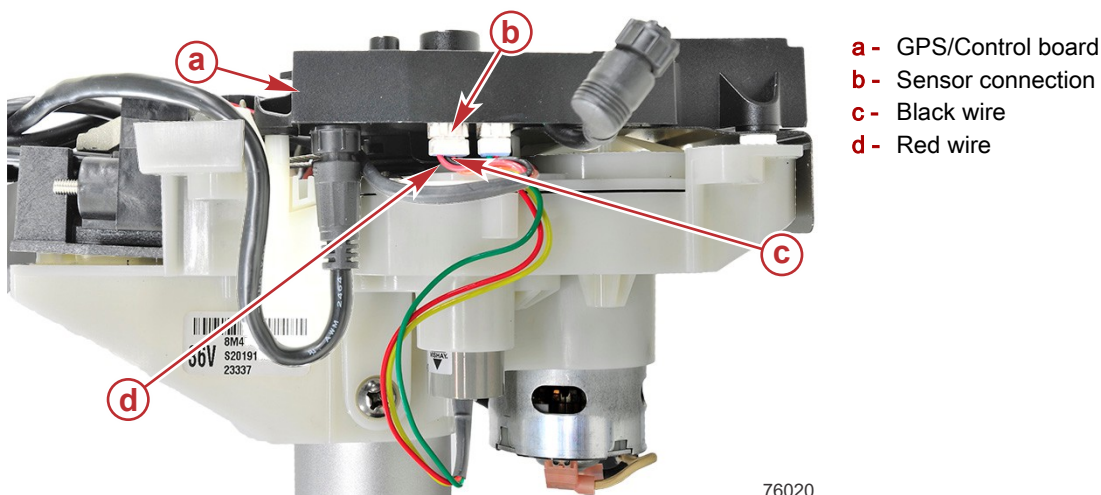
| | |
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| DMT 2004 Digital Multimeter | 91-892647A01 |
|-----------------------------|--------------|

- If the voltage is the same across all three readings, then replace the encoder.
- If the voltage readings are not low, higher, highest while rotating from heel to toe then the encoder is not oriented properly. Rotate the encoder until the voltages above are attained.
- Assemble the top housing. Refer to **Section 3B - Top Housing Assembly – Tour Pro.**

Check the Sensor Module

- Disassemble the top housing. Refer to **Section 3B - Top Housing Disassembly – Tour Pro.**
- Using a voltmeter, read the voltage across the black and red wires on the GPS/Control board for the Sensor.

| | |
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|-----------------------------|--------------|



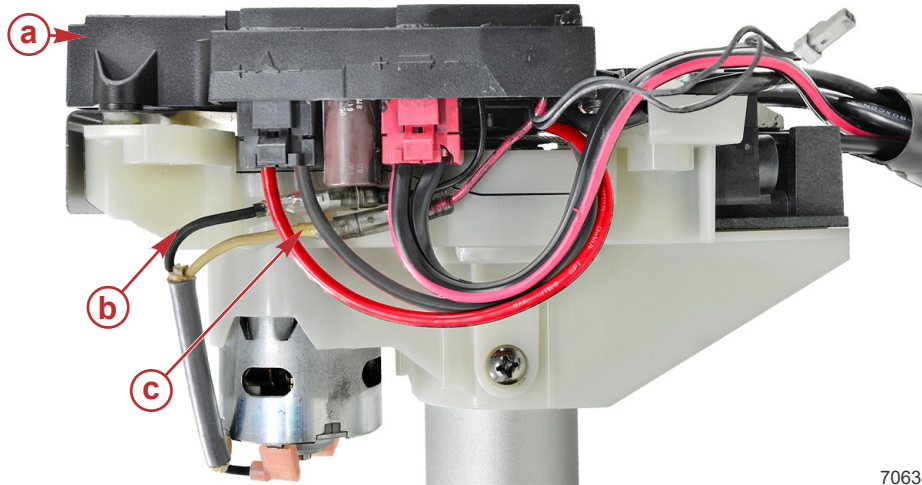
- If the voltage is 3.3 volts, then the sensor module is receiving power from the GPS/Control board.
- Assemble the top housing. Refer to **Section 3B - Top Housing Assembly – Tour Pro.**

Check the GPS/Control board for Steering Motor Voltage

- Disassemble the top housing. Refer to **Section 3B - Top Housing Disassembly – Tour Pro.**

Troubleshooting

2. Disconnect the white and black wire bullet connectors from the GPS/Control board.



- a - GPS/Control board
- b - Black wire bullet connector
- c - White wire bullet connector

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3. If the remote is functional other than steering, attempt to steer using remote control.
4. Using a voltmeter, read the voltage across the white and black wire bullet connectors on the GPS/Control board.

| | |
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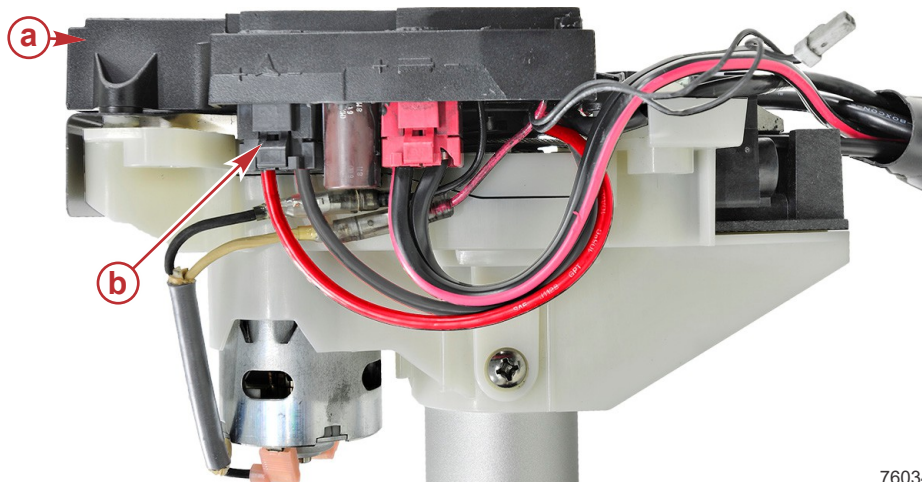
5. If a voltage is present, the issue is either the connector between the GPS/Control board and steering motor or the steering motor itself.
6. Using a voltmeter, check continuity of the wiring to determine if it is good.

| | |
|-----------------------------|--------------|
| DMT 2004 Digital Multimeter | 91-892647A01 |
|-----------------------------|--------------|

7. If a voltage is not present, then replace the GPS/Control board. Refer to **Section 3B - GPS/Control Board Removal, Wire Disconnection—Tour Pro** and **Section 3B - GPS/Control Board Installation, Wire Connection—Tour Pro**.
8. Assemble the top housing. Refer to **Section 3B - Top Housing Assembly – Tour Pro**

Check the GPS/Control board for Thrust Motor Voltage

1. Remove the propeller from the motor. Refer to **Section 3G - Removing the Propeller**.
2. Disassemble the top housing. Refer to **Section 3B - Top Housing Disassembly – Tour Pro**
3. Disconnect the black plug lower unit wires from the GPS/Control board.



- a - GPS/Control board
- b - Black plug lower unit wires

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4. Set the foot pedal speed knob to 5.

- Press prop on button to engage the motor.



- Using a voltmeter, check the voltage on the GPS/Control board between the black plug lower unit pins.

| | |
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- If the voltage is not approximately one half of battery voltage then replace the GPS/Control board. Refer to **Section 3B - GPS/Control Board Removal, Wire Disconnection—Tour Pro** and **Section 3B - GPS/Control Board Installation, Wire Connection—Tour Pro**.
- Assemble the top housing. Refer to **Section 3B - Top Housing Assembly – Tour Pro**.
- Install the propeller on the motor. Refer to **Section 3G - Installing the Propeller**.

Check the GPS/Control board for Foot Pedal Power and Communications

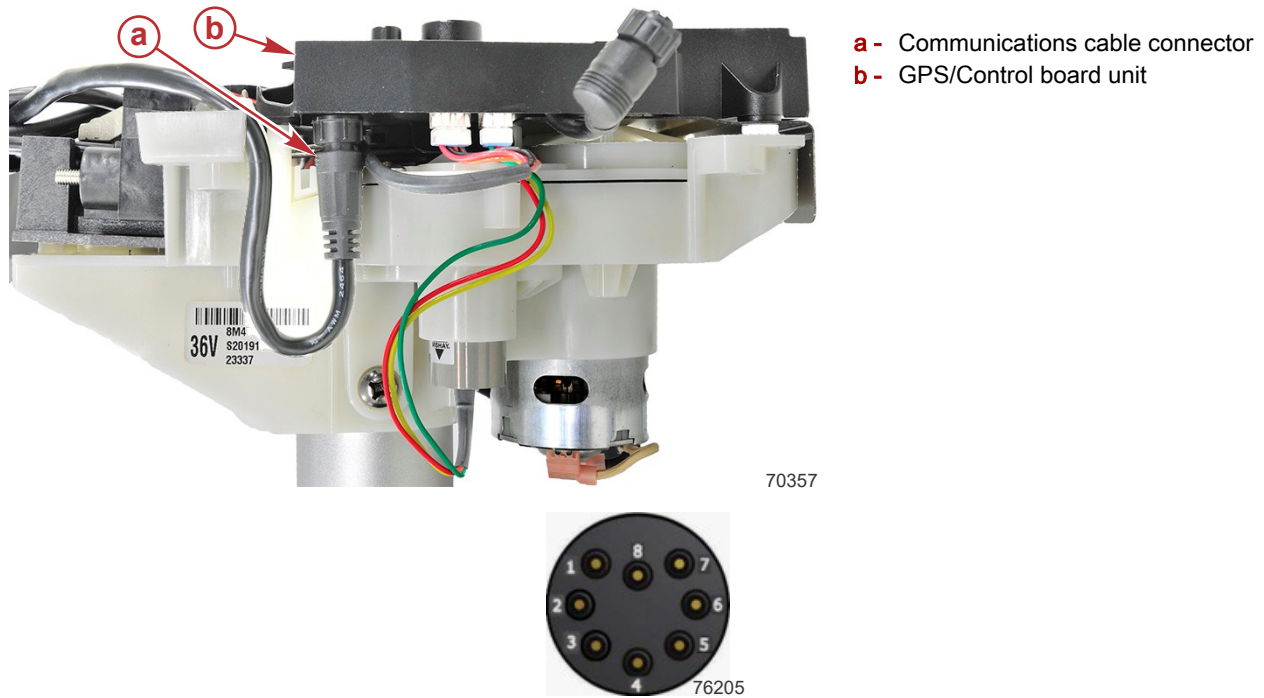
- Disassemble the top housing. Refer to **Section 3B - Top Housing Disassembly – Tour Pro**
- Verify that the communications cable is locked onto the GPS/Control board.
- If the foot pedal power returns, then the procedure is complete. Otherwise continue to the next step.
- Disconnect the communications cable from the GPS/Control board.
- Using a voltmeter, check the voltage from pins 1 to 2 in the communications cable connector.
- Using a voltmeter, check the voltage from pins 3 to 4 in the communications cable connector.
- Using a voltmeter, check the voltage from pins 5 to 6 in the communications cable connector.
- Using a voltmeter, check the voltage from pins 7 to 8 in the communications cable connector.

| | |
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| DMT 2004 Digital Multimeter | 91-892647A01 |
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- If pins 1 to 2 have zero voltage, replace the GPS/Control board. Refer to **Section 3B - GPS/Control Board Removal, Wire Disconnection—Tour Pro** and **Section 3B - GPS/Control Board Installation, Wire Connection—Tour Pro**. Otherwise, Connect the communications cable to the GPS/Control board.
- If pins 3 to 4 have zero voltage, replace the GPS/Control board. Refer to **Section 3B - GPS/Control Board Removal, Wire Disconnection—Tour Pro** and **Section 3B - GPS/Control Board Installation, Wire Connection—Tour Pro**. Otherwise, Connect the communications cable to the GPS/Control board.
- If pins 5 to 6 have zero voltage, replace the GPS/Control board. Refer to **Section 3B - GPS/Control Board Removal, Wire Disconnection—Tour Pro** and **Section 3B - GPS/Control Board Installation, Wire Connection—Tour Pro**. Otherwise, Connect the communications cable to the GPS/Control board.

Troubleshooting

- If pins 7 to 8 have zero voltage, replace the GPS/Control board. Refer to **Section 3B - GPS/Control Board Removal, Wire Disconnection—Tour Pro** and **Section 3B - GPS/Control Board Installation, Wire Connection—Tour Pro**. Otherwise, Connect the communications cable to the GPS/Control board.



- Assemble the top housing. Refer to **Section 3B - Top Housing Assembly – Tour Pro**.

Check the GPS/Control board for Indicator Power

- Disassemble the top housing. Refer to **Section 3B - Top Housing Disassembly – Tour Pro**.
- Press the foot pedal prop on button.

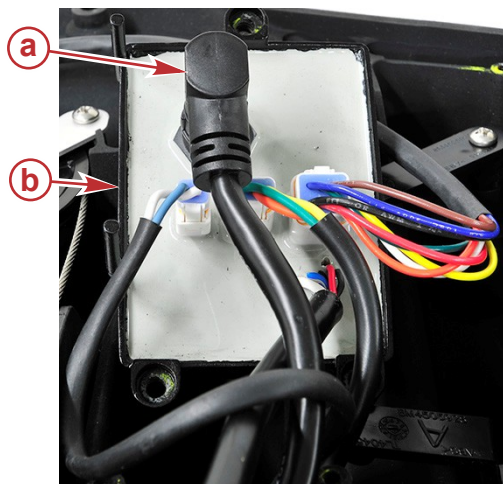


- Connect a known good indicator and power it on.
- If the known good indicator lights, then the prior Indicator was bad.
- If the known good indicator does not light, replace the GPS/Control Board. Refer to **Section 3B - GPS/Control Board Removal, Wire Disconnection—Tour Pro** and **Section 3B - GPS/Control Board Installation, Wire Connection—Tour Pro**.
- Assemble the top housing. Refer to **Section 3B - Top Housing Assembly – Tour Pro**.

Check the Communications Cable for Foot Pedal Power and Communications

- Disassemble the foot pedal. Refer to **Section 3D - Foot Pedal Disassembly**

2. Verify that the communications cable is locked onto the foot pedal control board. If the Foot Pedal power returns, then the procedure is complete. Otherwise go to the next step.
3. Disconnect the communications cable from the foot pedal control board.



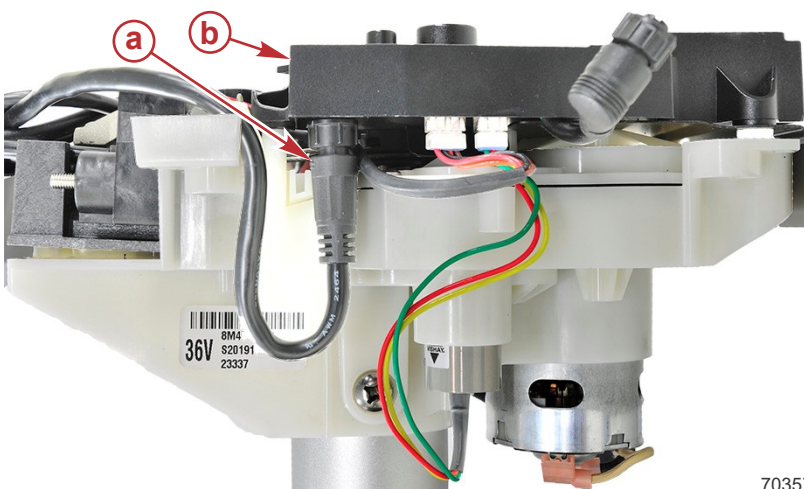
a - Communications cable
b - Foot pedal control board

76153

4. Using a voltmeter, check the voltage from pins 1 to 2 in the communications cable connector.
5. Using a voltmeter, check the voltage from pins 3 to 4 in the communications cable connector.
6. Using a voltmeter, check the voltage from pins 5 to 6 in the communications cable connector.
7. Using a voltmeter, check the voltage from pins 7 to 8 in the communications cable connector.

| | |
|-----------------------------|--------------|
| DMT 2004 Digital Multimeter | 91-892647A01 |
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8. If pins 1 to 2 have zero voltage, and the GPS/Control board for foot pedal power and communications has been checked, replace the communications cable. Refer to **Section 3D - Wire Removal—Tour**. Otherwise, connect the communications cable to the GPS/Control board.
9. If pins 3 to 4 have zero voltage, and the GPS/Control board for foot pedal power and communications has been checked, replace the communications cable. Refer to **Section 3D - Wire Removal—Tour**. Otherwise, connect the communications cable to the GPS/Control board.
10. If pins 5 to 6 have zero voltage, and the GPS/Control board for foot pedal power and communications has been checked, replace the communications cable. Refer to **Section 3D - Wire Removal—Tour**. Otherwise, connect the communications cable to the GPS/Control board.
11. If pins 7 to 8 have zero voltage, and the GPS/Control board for foot pedal power and communications has been checked, replace the communications cable. Refer to **Section 3D - Wire Removal—Tour**. Otherwise, connect the communications cable to the GPS/Control board.



a - Communications cable
b - GPS/Control board

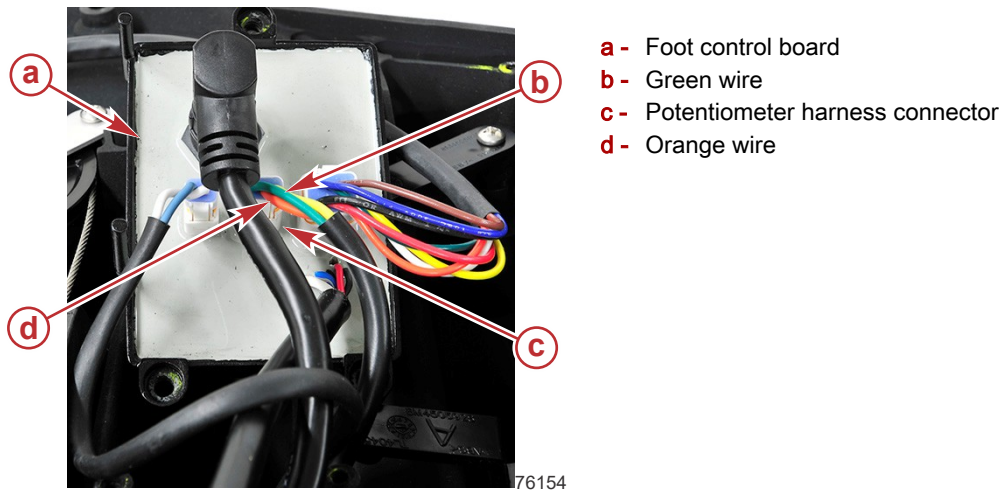
70357



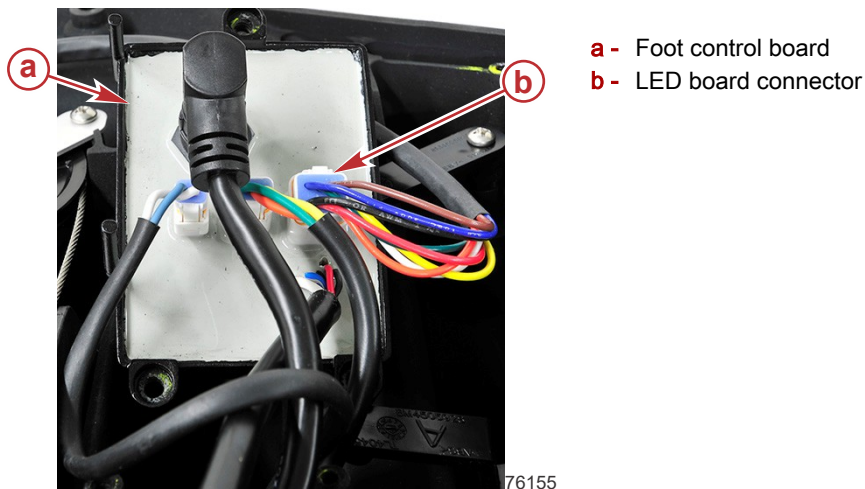
12. Assemble the top housing. Refer to **Section 3B - Top Housing Assembly – Tour Pro**
13. Assemble the foot pedal. Refer to **Section 3D - Foot Pedal Assembly**

Check the Foot Pedal Control Board for Power

1. Disassemble the foot pedal. Refer to **Section 3D - Foot Pedal Disassembly**
2. Disconnect the potentiometer harness connector from the foot pedal control board.
3. Check the voltage between the orange wire and green wire.



4. If the orange to green wire has zero voltage, and the **Check the Communications Cable for Foot Pedal Power and Communications** has been checked, replace the foot pedal control board. Refer to **Section 3D - Foot Pedal Control Board Removal—Tour Pro** and **Section 3D - Foot Pedal Control Board Installation—Tour Pro**.
5. Disconnect the foot pedal LED board connector from the foot pedal control board.



6. If diagnostic mode (**M888**) has already been entered, then press the 1 button to illuminate all the foot pedal LEDs and continue with the next step, otherwise return to the beginning of the procedure.
7. Using a voltmeter, check the voltage between the orange and black wires.
8. Using a voltmeter, check the voltage between the white and black wires.
9. Using a voltmeter, check the voltage between the red and black wires.
10. Using a voltmeter, check the voltage between the green and black wires.
11. Using a voltmeter, check the voltage between the brown and black wires.

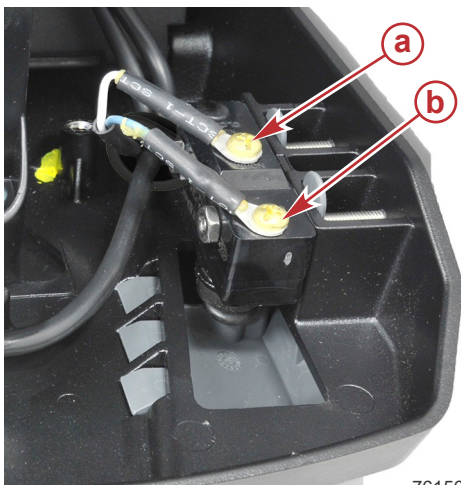
- Using a voltmeter, check the voltage between the blue and black wires.

| | |
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| DMT 2004 Digital Multimeter | 91-892647A01 |
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- If any of the voltages are zero, and the **Check the Communications Cable for Foot Pedal Power and Communications** has been checked, replace the foot pedal control board. Refer to **Section 3D - Foot Pedal Control Board Removal—Tour Pro** and **Section 3D - Foot Pedal Control Board Installation—Tour Pro**.
- Connect the potentiometer harness connector to the foot pedal control board.
- Connect the foot pedal LED board connector to the foot pedal control board.
- Assemble the foot pedal. Refer to **Section 3D - Foot Pedal Assembly**

Check the Momentary Switch

- Touch a short wire between the white wire and the light blue wire terminal screws. If the momentary switch activates then replace the momentary switch. Refer to **Section 3D - Momentary Switch Removal—Tour Pro** and **Section 3D - Momentary Switch Installation—Tour Pro**.
- Probe for the resistance across the white wire and the blue wire terminal screws on the momentary switch.



- a** - White wire terminal screw
- b** - Light blue wire terminal screw

76156

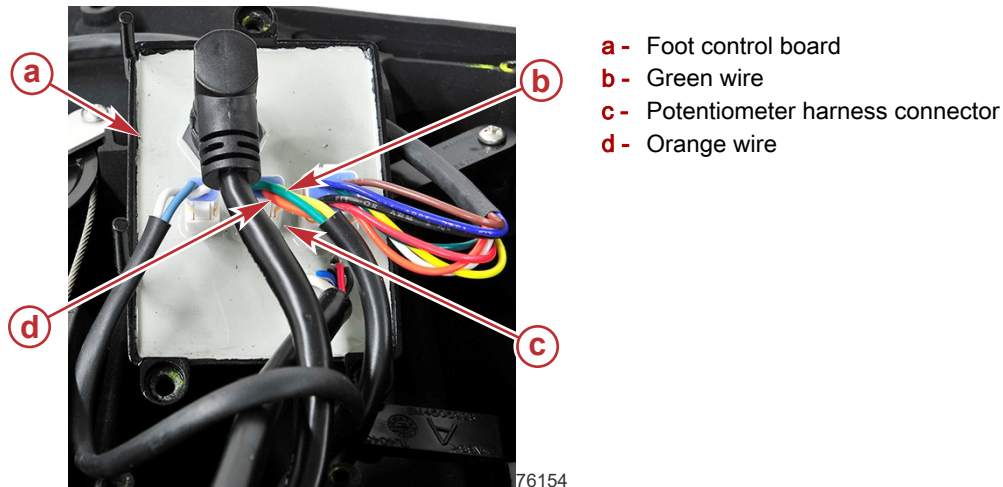
- When the momentary switch is not pressed the resistance will be very high on the order of 21M ohm, if not then replace the momentary switch. Refer to **Section 3D - Momentary Switch Removal—Tour Pro** and **Section 3D - Momentary Switch Installation—Tour Pro**
- When the momentary switch is pressed the resistance will be very low on the order of 1 ohm, if not then replace the momentary switch. Refer to **Section 3D - Momentary Switch Removal—Tour Pro** and **Section 3D - Momentary Switch Installation—Tour Pro**

Check the Speed Knob

- Disassemble the foot pedal. Refer to **Section 3D - Foot Pedal Disassembly**
- Disconnect the potentiometer harness connector from the foot pedal control board.

Troubleshooting

3. Probe the resistance between the orange and yellow wires on the potentiometer harness connector.



4. As the knob is rotated the resistance will vary. If not, replace the potentiometer, refer to **Section 3D - Potentiometer Removal—Tour/Tour Pro** and **Section 3D - Potentiometer Installation—Tour/Tour Pro**. Otherwise reconnect the potentiometer harness connector.
5. Assemble the foot pedal. Refer to **Section 3D - Foot Pedal Assembly**

Check for Prop On Magnet

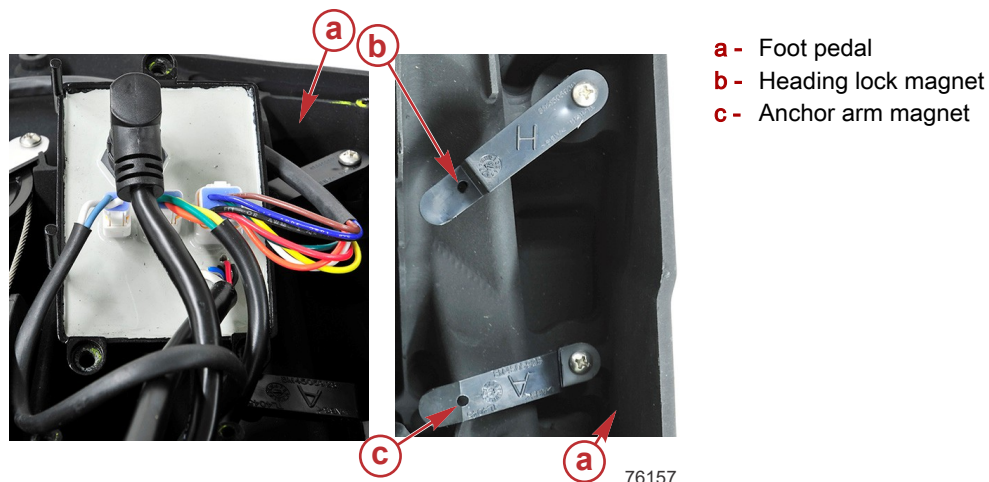
1. Disassemble the foot pedal. Refer to **Section 3D - Foot Pedal Disassembly**
2. Verify that the magnet is on the prop on arm.



3. Assemble the foot pedal. Refer to **Section 3D - Foot Pedal Assembly**

Check for Anchor and Heading Lock magnet

1. Disassemble the foot pedal. Refer to **Section 3D - Foot Pedal Disassembly**
2. Verify that the magnet is on the heading lock arm and the anchor arm.



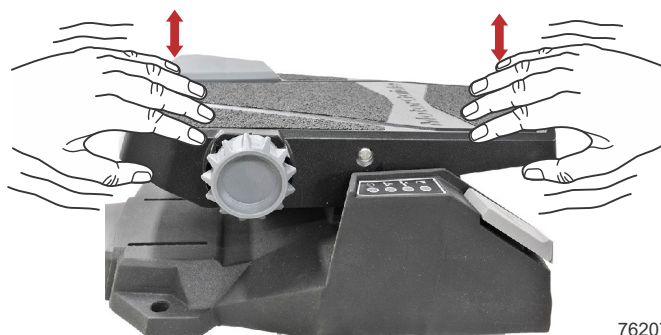
3. Assemble the foot pedal. Refer to **Section 3D - Foot Pedal Assembly**

Check the Foot Pedal LED Board for Power

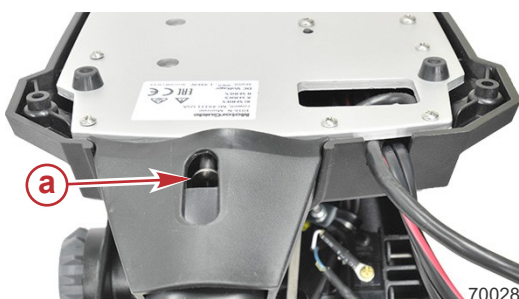
1. Check the foot pedal control board for power.
2. Confirm that power is being delivered to the foot pedal LED board. Replace the foot pedal LED board harness. Refer to **Section 3D - Wire Removal—Tour**.

Check for Properly Adjusted Cable Tension

1. Remove the foot pedal from the deck of the boat or foot pedal tray.
2. With the Tour Pro powered off and stowed:
 - a. Inspect the cable sheathing for twist, sharp bend, or cable ties/tape added to the steering cables of the Tour Pro.
 - b. Remove any excess cable ties, tightly installed tape, and sharp bends in cable routing.
 - c. Rotate the foot pedal to remove any twist observed to the steering cables inside of the sheathing.
 - d. Rock the foot pedal from heel to toe. Approximately 0.125"-0.250" of free play should be observed in the pedal assembly.



- e. Adjustment to manual foot pedal tension to achieve proper free play by tightening or loosening the screw on the bottom of the foot pedal.



a - Steering cable tension screw

3. Apply power to the Tour Pro.
4. Turn the speed knob to zero to avoid accidental activation of the propeller.
5. Deploy the Tour Pro.
6. Using a synced Pinpoint remote, steer the Tour Pro from max toe down to max heel down and back to max toe down.
7. When the lower unit can rotate 360 degrees without stopping or shaking the cable tension is loose enough for power steering operation.

IMPORTANT: Bike service clamps and park tools MUST be applied to the aluminum outer column of the Tour Pro or the steering system should be fixed to a Tour Pro mount.

Clamping of the composite column will not allow the system to properly rotate.

8. Complete a M284 Foot Pedal End of Travel Calibration. Refer to **3B - Foot Pedal End-of-Travel Calibration**.
9. Power off the Tour Pro.
10. Apply power to the Tour Pro.
11. Complete a M285 steering sensor module calibration. Refer to **3B - Sensor Module Calibration**.

Troubleshooting

- a. The pedal should move on its own to both max heel and max toe down position.



- b. If the motor stops in the neutral position, the calibration was not successful. Perform the **Check for Properly Adjusted Cable Tension** procedure again.



12. After the sensor module calibration is complete, steer the Tour Pro using the Pinpoint remote from max heel to max toe position.
13. Steer the Tour Pro using the foot pedal from max toe down to max heel down.

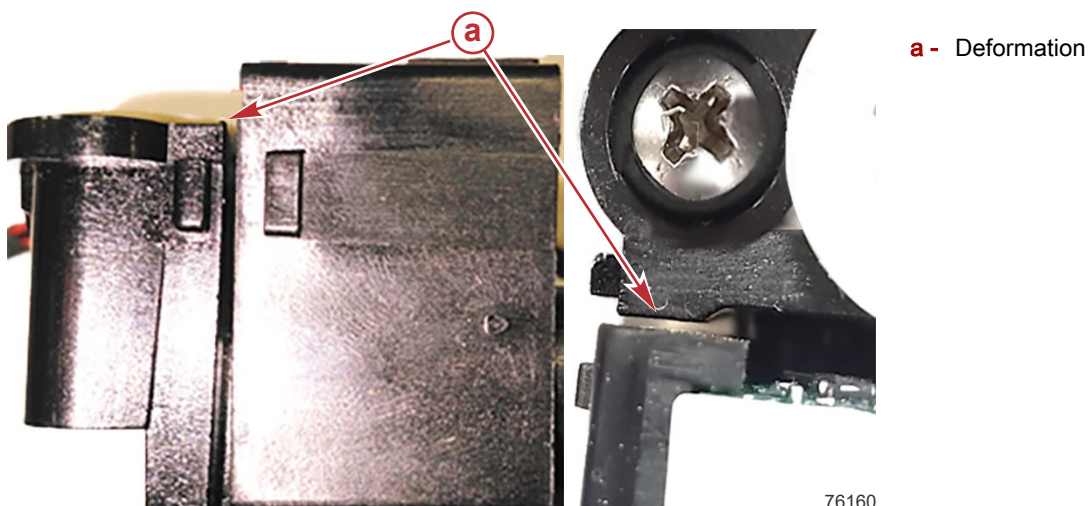
NOTE: The steering effort should be equal in both directions and resistance effort should change from M232 to M235.



14. If the pedal is overly stiff cable tension could be too loose, Perform the **Check for Properly Adjusted Cable Tension** procedure again.
15. If tension is correct, inspect the sensor module for impact damage.
16. If damage is observed, replace the sensor module. Refer to **Section 3B - Top Housing Disassembly – Tour Pro** and **Section 3B - Top Housing Assembly – Tour Pro**.

NOTE: Gap of the sensor module can be measured with a feeler gauge while the system is powered off. If the gap is greater than 1.2 mm (0.047 in.) on either side, replace the sensor module. Refer to **Section 3B - Top Housing Disassembly – Tour Pro** and **Section 3B - Top Housing Assembly – Tour Pro**.

IMPORTANT: Observed deformation is a sign of extreme impact damage and should not be warranted.



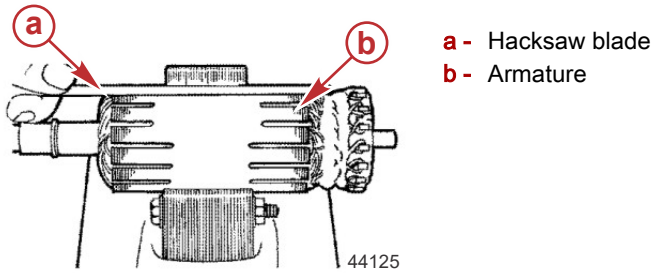
M888 Diagnostic Mode – (REV H or Newer Software Required)

Every button press on the remote and foot pedal will give a beep to verify it receives an input. Some will also perform an action shown in the table below.

| | | |
|--------------|---|--|
| Cruise | Show Center Calibration | Shaft will rotate to the center position and if set correctly will align with the head. If not, perform M283. |
| Heading Lock | Show Keel Calibration | Shaft will rotate to keel position and if set correctly will align with the keel of the boat. If not, perform M112. |
| Right Button | Show Toe Down Hard Stop | Shaft will rotate to toe down hard stop. If it doesn't look good, then perform M284. |
| Left Button | Show Heel Down Hard Stop | Shaft will rotate to heel down hard stop. If it doesn't look good, then perform M284. |
| 1 | Show Indicator LED | Toggle Indicator LEDs on/off |
| 2 | Show Foot Pedal LEDs | Toggle Foot Pedal LEDs on/off |
| 3 | Check Encoder | Shaft rotates to toe down and heel down. Displays red LED if an open is detected, yellow LED if the encoder needs to be realigned, and green if the encoder is okay. |
| 4 | Display Wireless Receiver Communications Status | Displays red LED if no communications, else green LED if okay. |
| 5 | Display Sensor Board Communications Status | Displays red LED if no communications, else green LED if okay. |
| 6 | Display Pinpoint Communications Status | Displays red LED if no communications, else green LED if okay. |
| 7 | Display Foot Pedal Communications Status | Displays red LED if no communications, else green LED if okay. |
| 8 | Display Pinpoint Compass Calibration | The lat/long is saved upon a successful compass calibration. In diagnostic mode the red LED will be illuminated if the distance between the locations is greater than 200 miles, yellow LED if greater than 150 miles, and green if the calibration was near by. |

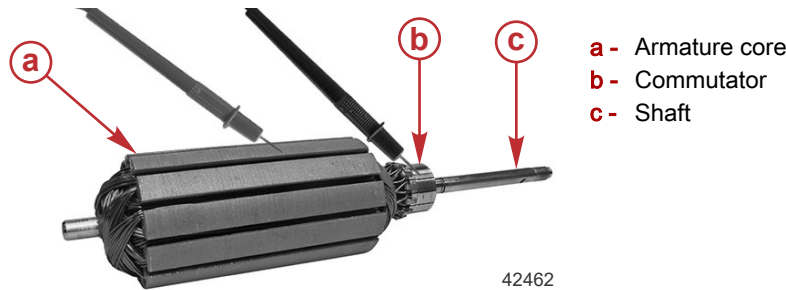
Testing

Checking the Armature for Short Circuits



1. Place the armature in a growler. Turn on the growler.
2. Hold a hacksaw blade over the armature core while rotating the armature.
3. If the hacksaw blade vibrates, the armature is shorted.
4. Clean the armature between the commutator bars.
5. Test the armature in a growler after cleaning between the commutator bars. If the hacksaw blade still vibrates, replace the armature.

Checking the Armature for Ground



1. With an ohmmeter set on the Rx100 scale, place one probe on the commutator and the other probe on the armature core or the armature shaft.
2. If the meter indicates continuity (current flow), the armature is grounded and must be replaced.

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Interference Troubleshooting

Interference may occur due to a variety of causes on the boat such as the manufacturer of the depth finder, its location, the transducer location, the boat wiring configuration, and the condition of the boat wiring or boat connections. Interference is most prevalent when the trolling motor transducer is turned on, the depth finder is in high manual gain mode, and the trolling motor is operating at a slow speed.

Checking for Interference

The potential exists for interference to occur with some sonars due to a trolling motor's pulse width modulation (PWM) speed control.

- **LCD models** – the display may turn solid black or blank out the display when the trolling motor is turned on. When the trolling motor is stopped the display returns to normal operation.
- **Flashers** – the flasher may "bloom" (a bright light appears on a dark scene) then turns blank (no flash at all) when the motor is turned on.

To locate the interference source:

1. Deploy the trolling motor and then turn the motor on to speed 10.
2. If the interference continues or decreases slightly, the trolling motor may be shorted or there is a problem with the boat wiring.

Mercury Marine Service Offices

For assistance, call, fax, or write. Please include your daytime telephone number with mail and fax correspondence.

| United States, Canada | | |
|------------------------------|---|---|
| Telephone | English +1 920 929 5040 Français + 905 636 4751 | Mercury Marine W6250 Pioneer Road P.O. Box 1939 Fond du Lac, WI 54936-1939 |
| Fax | English +1 920 929 5893 Français +1 905 636 1704 | |
| Website | www.mercurymarine.com | |

| Australia, Pacific | | |
|---------------------------|-----------------|---|
| Telephone | +61 3 9791 5822 | Brunswick Asia Pacific Group 41-71 Bessemer Drive Dandenong South, Victoria 3175 Australia |
| Fax | +61 3 9706 7228 | |

| Europe, Middle East, Africa | | |
|------------------------------------|-----------------|--|
| Telephone | +32 87 32 32 11 | Brunswick Marine Europe Parc Industriel de Petit-Rechain B-4800 Verviers, Belgium |
| Fax | +32 87 31 19 65 | |

| Mexico, Central America, South America, Caribbean | | |
|--|-----------------|---|
| Telephone | +1 954 744 3500 | Mercury Marine 11650 Interchange Circle North Miramar, FL 33025 U.S.A. |
| Fax | +1 954 744 3535 | |

| Asia, Singapore, Japan | | |
|-------------------------------|--------------|---|
| Telephone | +65 68058100 | Mercury Marine Singapore Pte Ltd 11 Changi South Street 3, #01-02 Singapore, 486122 |
| Fax | +65 68058138 | |

Notes:

Trolling Motor Disassembly and Assembly

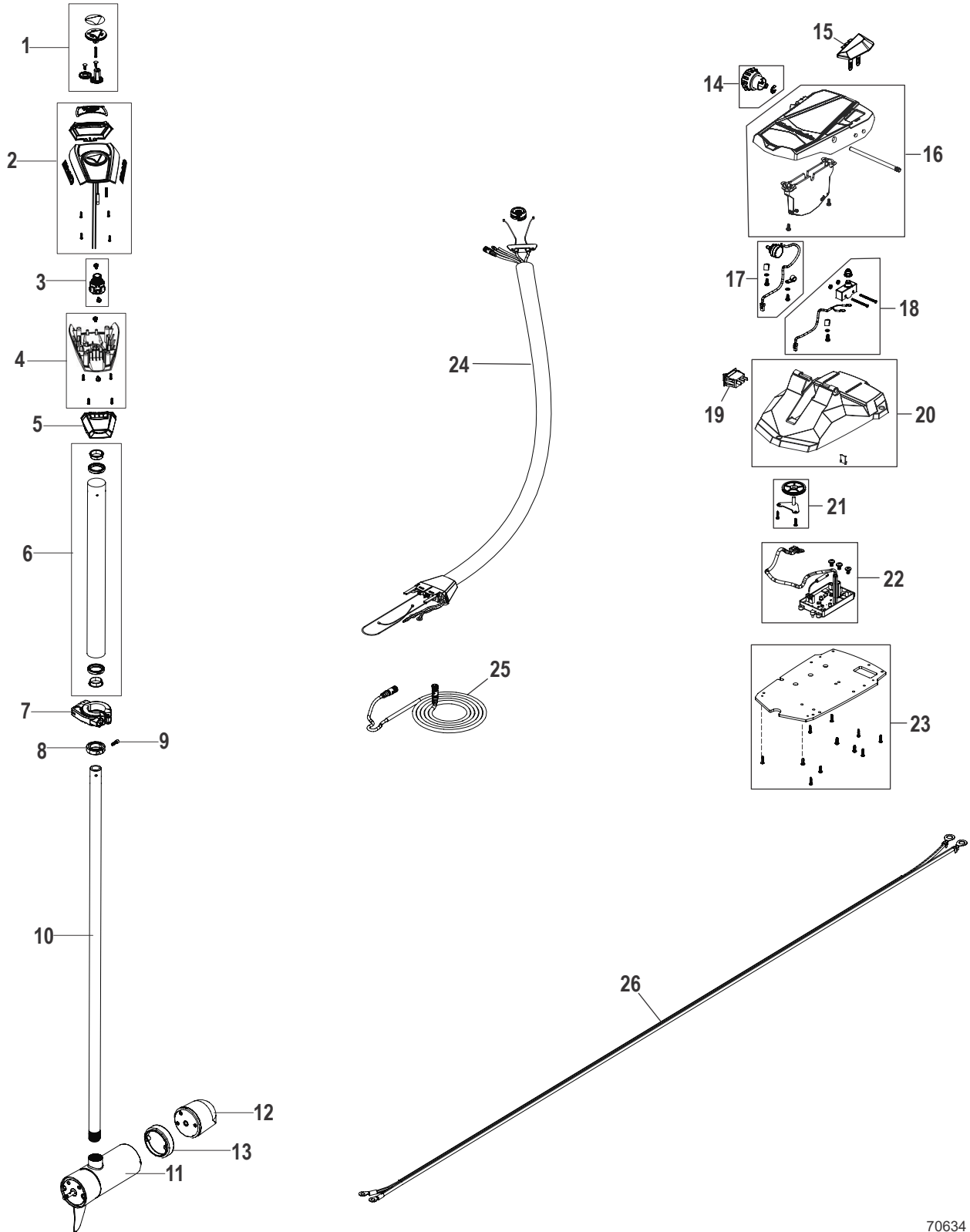
Section 3A - Trolling Motor Parts Identification

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| Lower Unit Assembly—FW82..... | 3A-8 | | |

3
A

Complete Trolling Motor—Tour

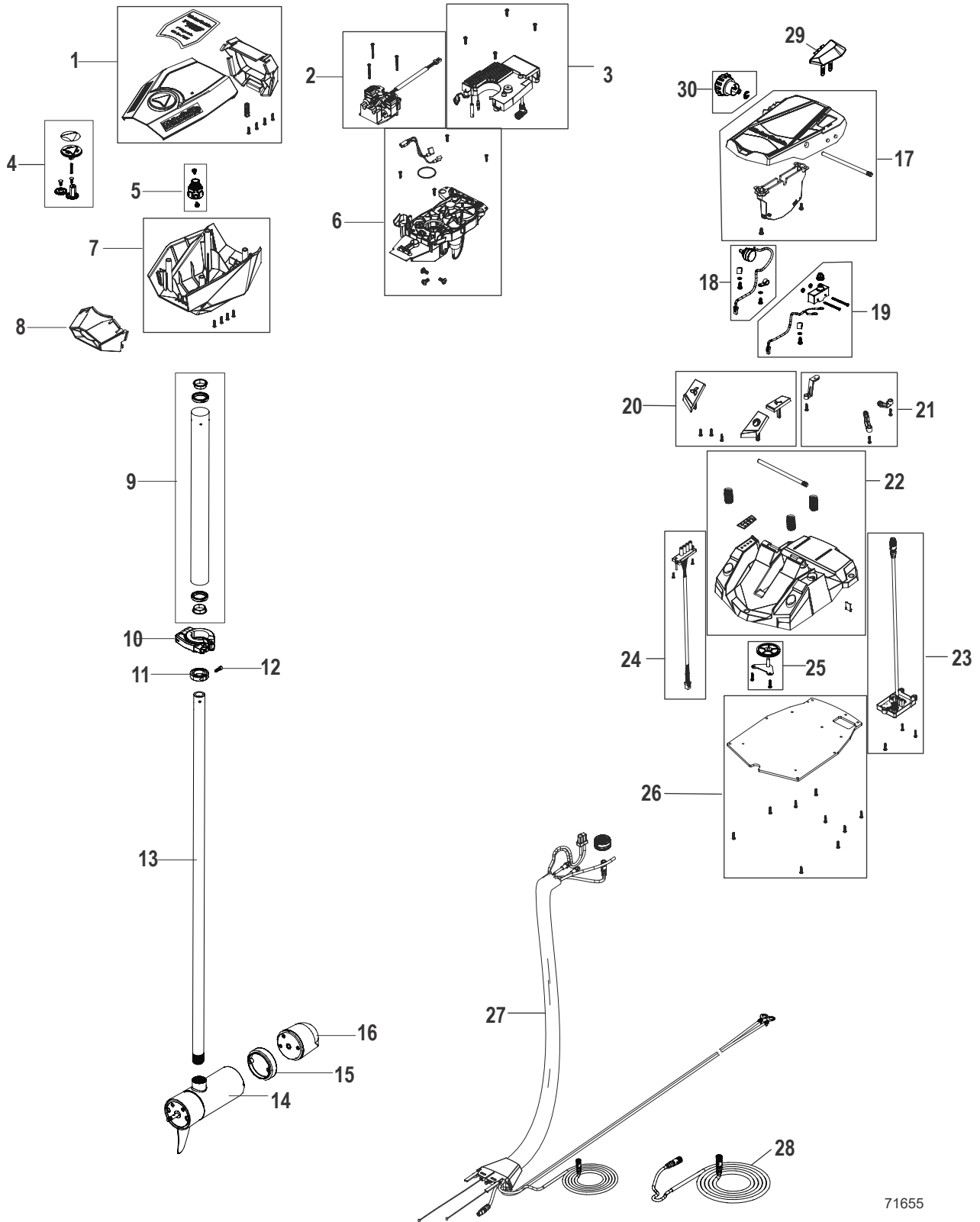


70634

Complete Trolling Motor—Tour

| Ref. No. | Qty. | Description | Torque | | |
|----------|------|------------------------------------|--------|--------|-------|
| | | | Nm | lb-in. | lb-ft |
| 1 | 1 | Full indicator kit | | | |
| 2 | 1 | Head cap kit | | | |
| 3 | 1 | Pinion kit | | | |
| 4 | 1 | Bottom head kit | | | |
| 5 | 1 | Strain relief kit | | | |
| 6 | 1 | Outer column kit | | | |
| 7 | 1 | Depth collar | | | |
| 8 | 1 | Clamp collar kit | | | |
| 9 | 1 | Screw | | | |
| 10 | 1 | Column kit | | | |
| 11 | 1 | Motor | | | |
| 12 | 1 | HD+ nose cone kit | | | |
| 13 | 1 | Spacer | | | |
| 14 | 1 | Speed knob kit | | | |
| 15 | 1 | Momentary button kit | | | |
| 16 | 1 | Foot pedal pad kit | | | |
| 17 | 1 | Potentiometer harness assembly kit | | | |
| 18 | 1 | Momentary switch kit | | | |
| 19 | 1 | Switch | | | |
| 20 | 1 | Foot pedal base kit | | | |
| 21 | 1 | Pulley kit | | | |
| 22 | 1 | Foot pedal control board kit | | | |
| 23 | 1 | Foot pedal base plate kit | | | |
| 24 | 1 | Cable harness with sonar kit | | | |
| 25 | 1 | Sonar cable kit | | | |
| 26 | 1 | Battery cable kit | | | |

Complete Trolling Motor—Tour Pro

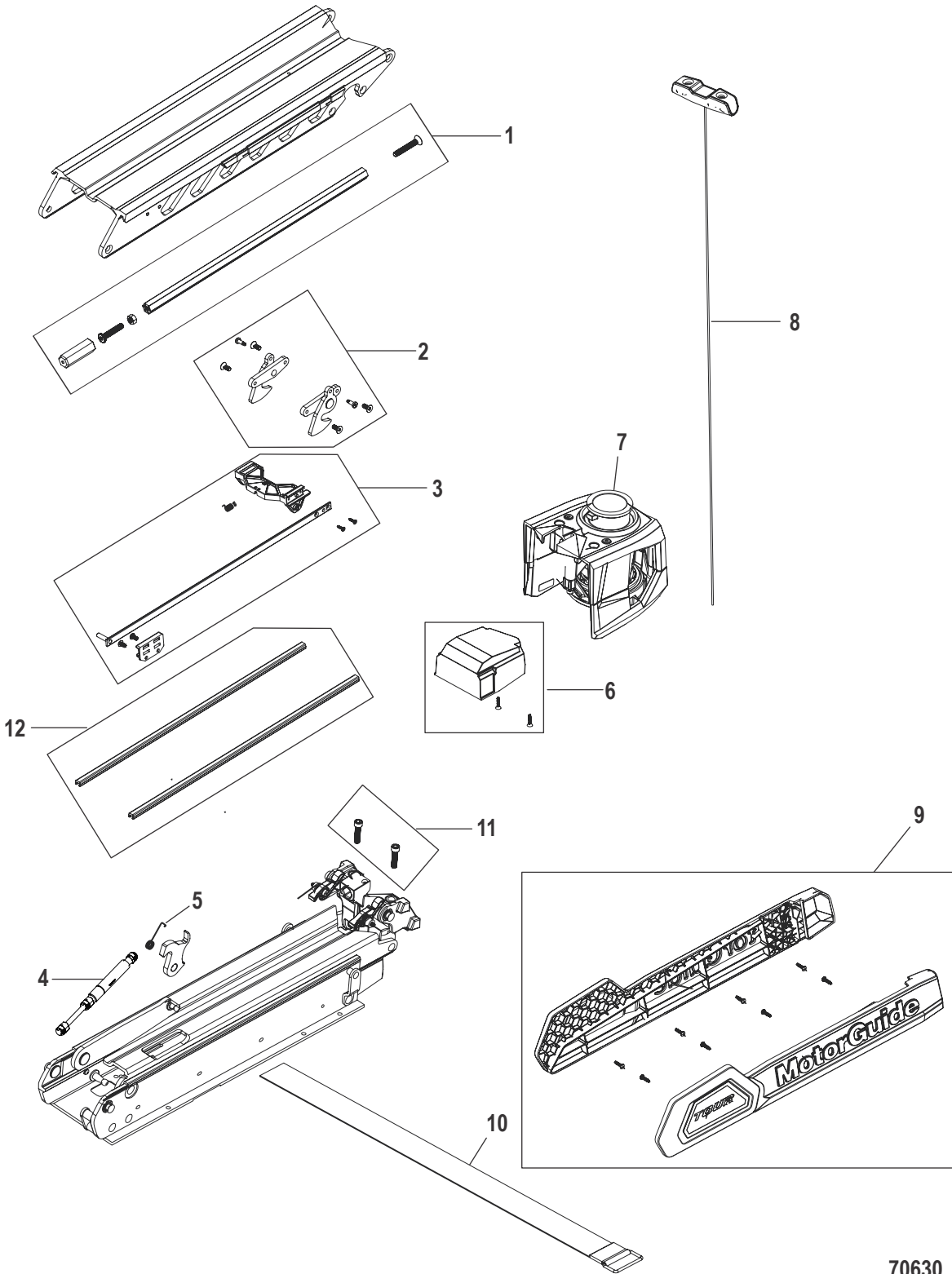


71655

Complete Trolling Motor—Tour Pro

| Ref. No. | Qty. | Description | Torque | | |
|----------|------|------------------------------------|--------|--------|-------|
| | | | Nm | lb-in. | lb-ft |
| 1 | 1 | Head cap kit | | | |
| 2 | 1 | Sensor module kit | | | |
| 3 | 1 | Main controller kit | | | |
| 4 | 1 | Full indicator kit | | | |
| 5 | 1 | Pinion kit | | | |
| 6 | 1 | Transmission kit | | | |
| 7 | 1 | Base head kit | | | |
| 8 | 1 | Strain relief kit | | | |
| 9 | 1 | Outer column kit | | | |
| 10 | 1 | Depth collar | | | |
| 11 | 1 | Clamp collar kit | | | |
| 12 | 1 | Screw (NSS) | | | |
| 13 | 1 | Column kit | | | |
| 14 | 1 | Lower unit | | | |
| 15 | 1 | Spacer | | | |
| 16 | 1 | HD+ nose cone kit | | | |
| 17 | 1 | Foot pedal base pad kit | | | |
| 18 | 1 | Potentiometer harness assembly kit | | | |
| 19 | 1 | Momentary switch kit | | | |
| 20 | 1 | Foot pedal button kit | | | |
| 21 | 1 | Foot pedal arm kit | | | |
| 22 | 1 | Foot pedal base kit | | | |
| 23 | 1 | Foot pedal controller kit | | | |
| 24 | 1 | Foot pedal LED board kit | | | |
| 25 | 1 | Pulley kit | | | |
| 26 | 1 | Foot pedal base plate kit | | | |
| 27 | 1 | Sonar harness assembly kit | | | |
| 28 | 1 | Sonar cable kit | | | |
| 29 | 1 | Momentary switch kit | | | |
| 30 | 1 | Speed knob kit | | | |

Bow mount—Tour/Tour Pro

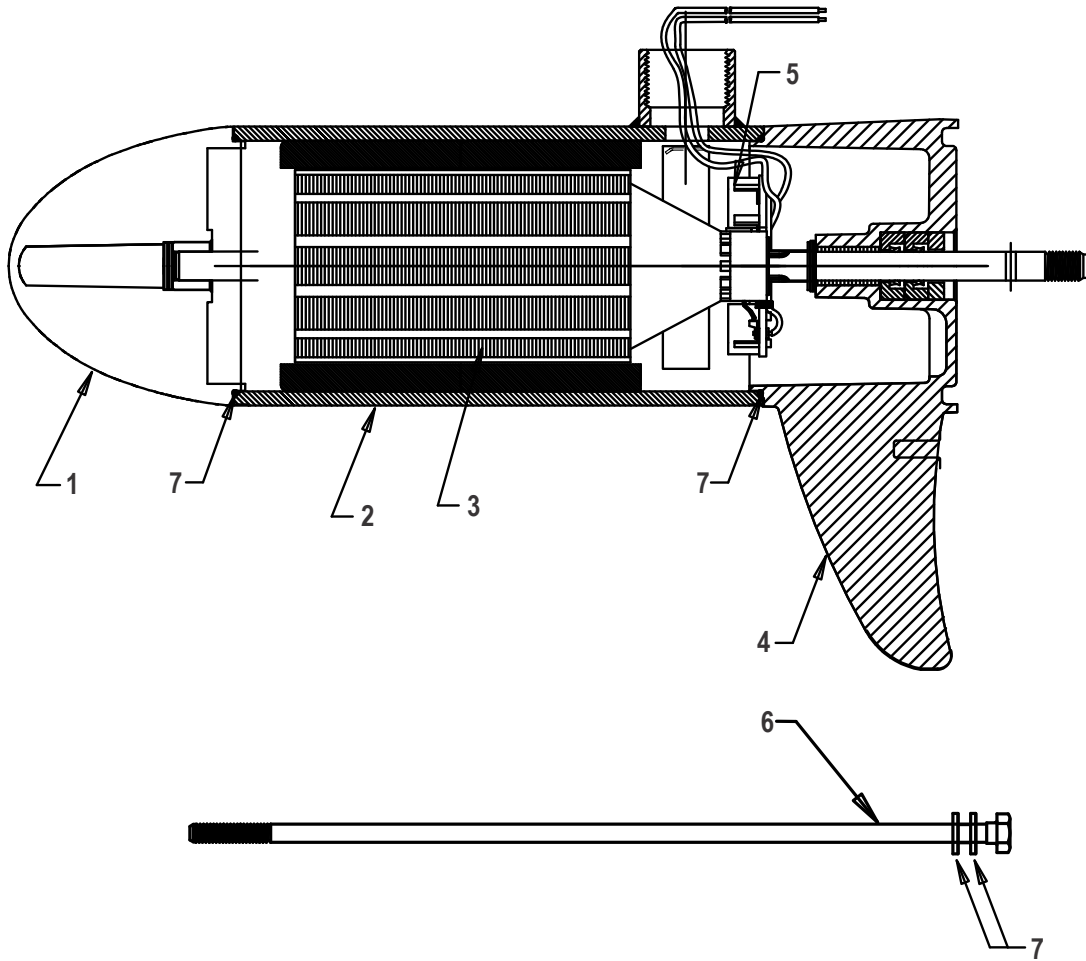


70630

Bow mount—Tour/Tour Pro

| Ref. No. | Qty. | Description | Torque | | |
|----------|------|---------------------------|--------|--------|-------|
| | | | Nm | lb-in. | lb-ft |
| 1 | 1 | Bounce buster kit | | | |
| 2 | 1 | Deploy latch assembly kit | | | |
| 3 | 1 | Release linkage kit | | | |
| 4 | 1 | Gas spring | | | |
| 5 | 1 | Stow latch spring kit | | | |
| 6 | 1 | Front decket kit | | | |
| 7 | 1 | 360 breakaway kit | | | |
| 8 | 1 | Stow handle/cable kit | | | |
| 9 | 1 | Side decket kit | | | |
| 10 | 1 | Strap | | | |
| 11 | 1 | Screw kit | | | |
| 12 | 1 | Decket rail bumper | | | |

Lower Unit Assembly—FW82



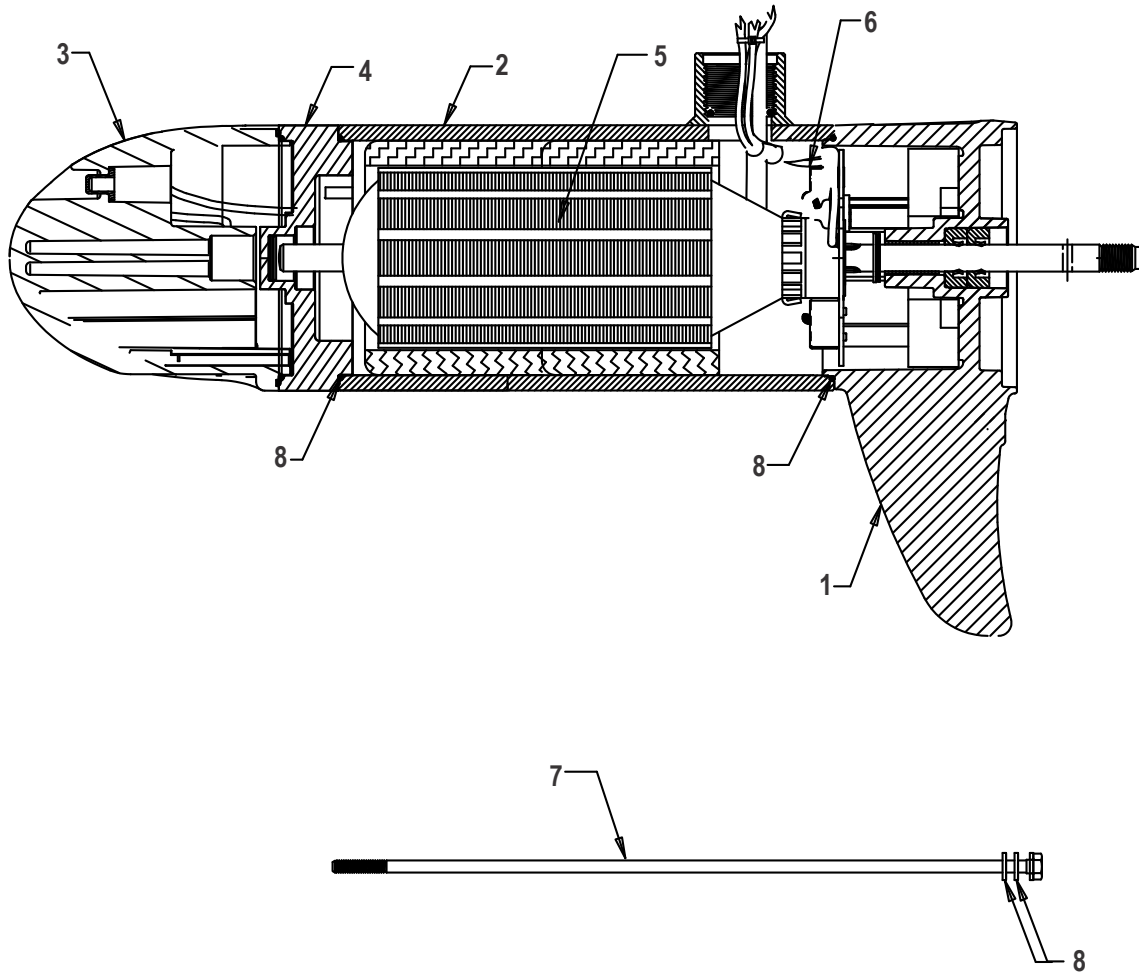
46417

Lower Unit Assembly—FW82

FW80—Variable Speed

| Ref. No. | Qty. | Description | Torque | | |
|----------|------|---|--------|--------|-------|
| | | | Nm | lb-in. | lb-ft |
| 1 | 1 | Nose cone assembly (with bushing and thrust washer) | | | |
| 2 | 1 | Housing assembly (with magnet and wire retainer) | | | |
| 3 | 1 | Armature kit (with Nylatron® washer) | | | |
| 4 | 1 | Commutator cap assembly (with seals and bushings) | | | |
| 5 | 1 | Brush card kit (with springs and screws) | | | |
| 6 | 1 | Through bolt assembly | 5.1 | 45 | – |
| 7 | 1 | Seal kit (for magnet housing and through bolts) | | | |

Lower Unit Assembly—FW82 HD+ Universal Sonar



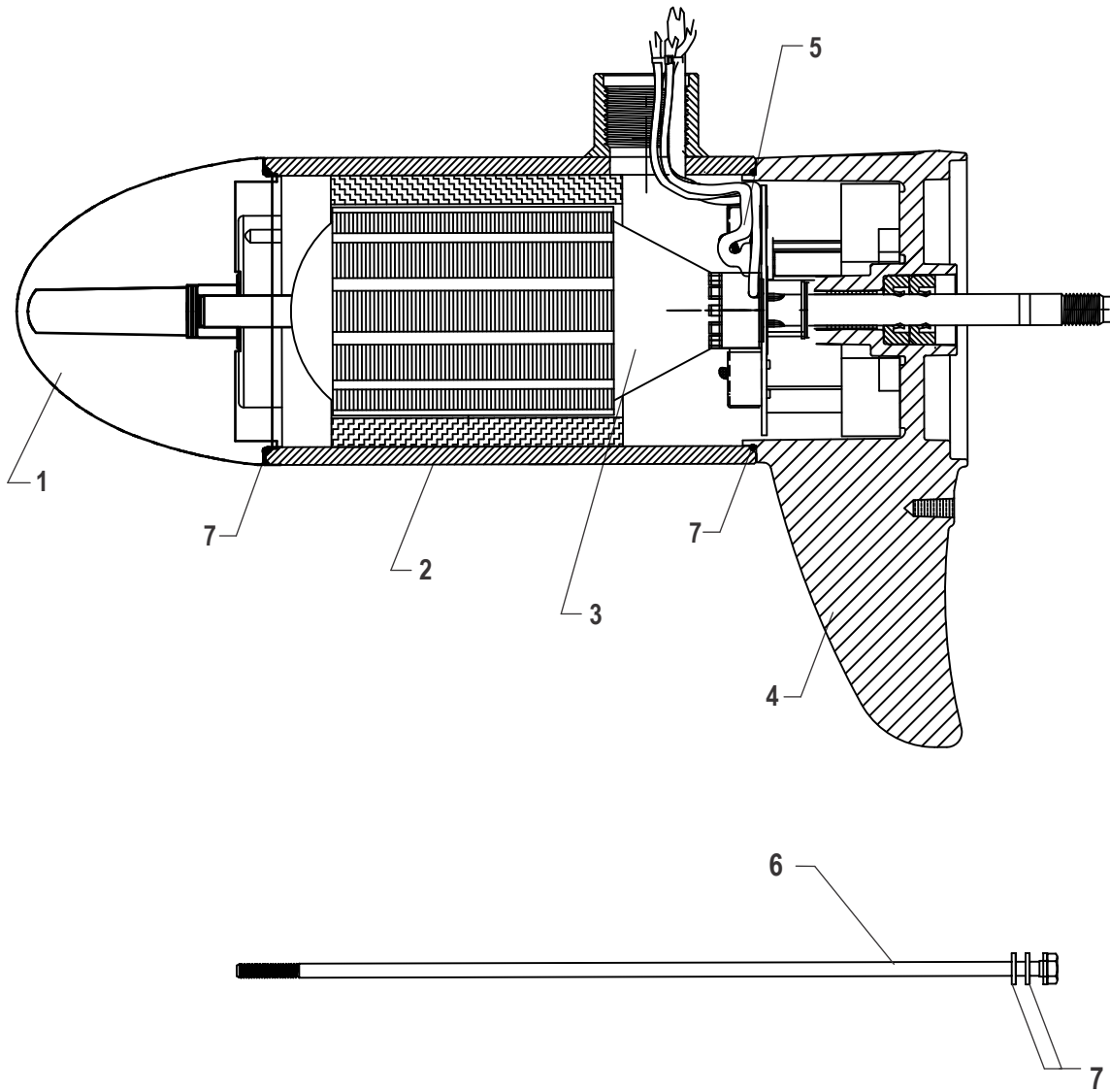
46466

Lower Unit Assembly—FW82 HD+ Universal Sonar

FW80—Variable Speed Sonar

| Ref. No. | Qty. | Description | Torque | | |
|----------|------|---|--------|--------|-------|
| | | | Nm | lb-in. | lb-ft |
| 1 | 1 | Commutator cap assembly (with seals and bushings) | | | |
| 2 | 1 | Housing assembly (with magnet and wire retainer) | | | |
| 3 | 1 | Nose cone assembly (sonar, with screws) | | | |
| 4 | 1 | Spacer assembly (with screws, spacers, and bearing) | | | |
| 5 | 1 | Armature kit (with Nylatron® washer) | | | |
| 6 | 1 | Brush card kit (with springs and screws) | | | |
| 7 | 1 | Through bolt assembly | 5.1 | 45 | – |
| 8 | 1 | Seal kit (for magnet housing and through bolts) | | | |

Lower Unit Assembly—FW109



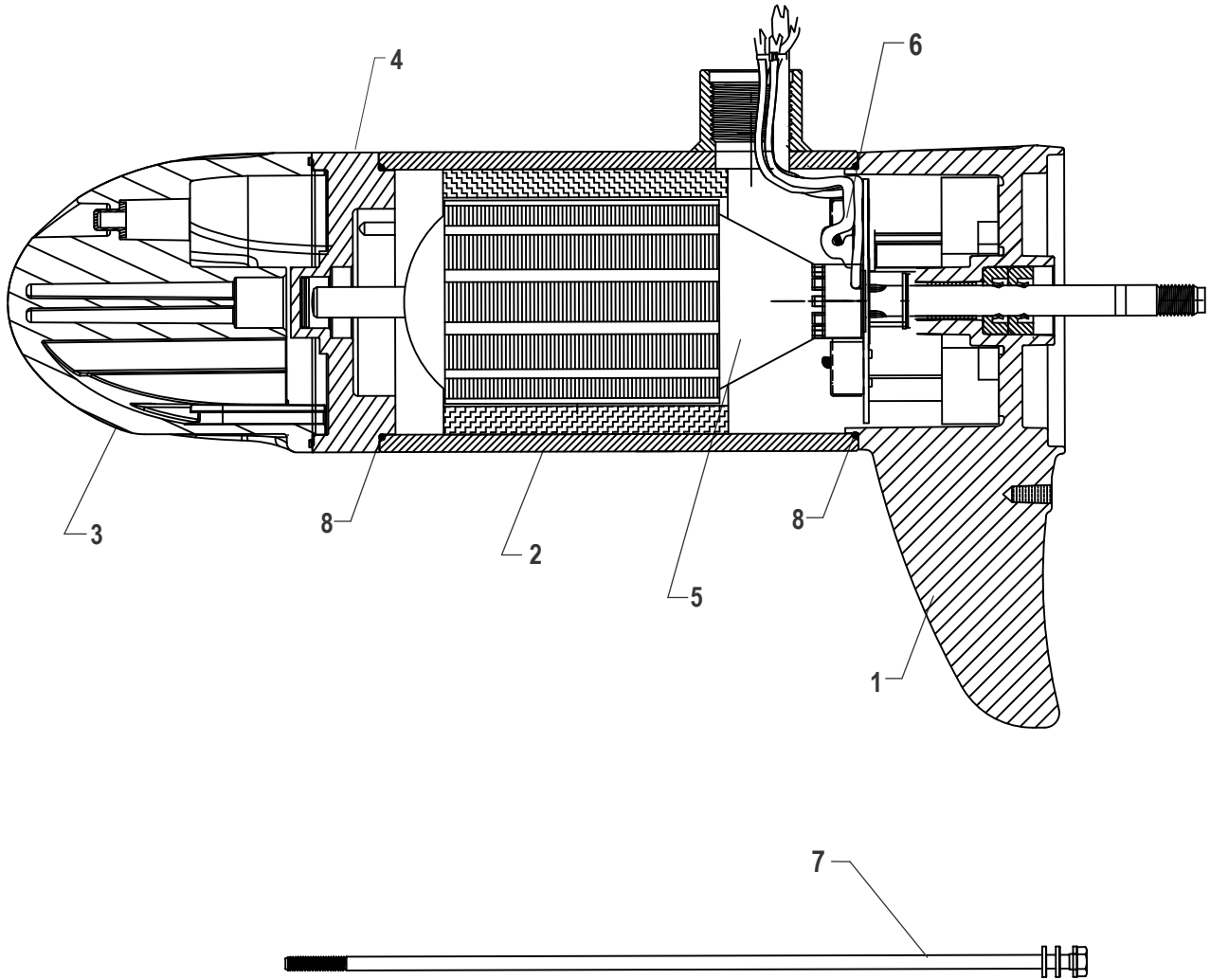
56622

Lower Unit Assembly—FW109

FW105—Variable Speed

| Ref. No. | Qty. | Description | Torque | | |
|----------|------|---|--------|--------|-------|
| | | | Nm | lb-in. | lb-ft |
| 1 | 1 | Nose cone assembly (with bushing and thrust washer) | | | |
| 2 | 1 | Housing assembly (with magnet and wire retainer) | | | |
| 3 | 1 | Armature kit (with Nylatron® washer) | | | |
| 4 | 1 | Commutator cap assembly (with seals and bushings) | | | |
| 5 | 1 | Brush card kit (with springs and screws) | | | |
| 6 | 1 | Through bolt assembly | 5.1 | 45 | – |
| 7 | 1 | Seal kit (for magnet housing and through bolts) | | | |

Lower Unit Assembly—FW109 HD+ Universal Sonar



56621

Lower Unit Assembly—FW109 HD+ Universal Sonar

FW105—Variable Speed Sonar

| Ref. No. | Qty. | Description | Torque | | |
|----------|------|---|--------|--------|-------|
| | | | Nm | lb-in. | lb-ft |
| 1 | 1 | Commutator cap assembly (with seals and bushings) | | | |
| 2 | 1 | Housing assembly (with magnet and wire retainer) | | | |
| 3 | 1 | Nose cone assembly (sonar, with screws) | | | |
| 4 | 1 | Spacer assembly (with screws, washers, and bearing) | | | |
| 5 | 1 | Armature kit (with Nylatron® washer) | | | |
| 6 | 1 | Brush card kit (with springs and screws) | | | |
| 7 | 1 | Through bolt assembly | 5.1 | 45 | – |
| 8 | 1 | Seal kit (for magnet housing and through bolts) | | | |

Notes:

Trolling Motor Disassembly and Assembly

Section 3B - Top Housing

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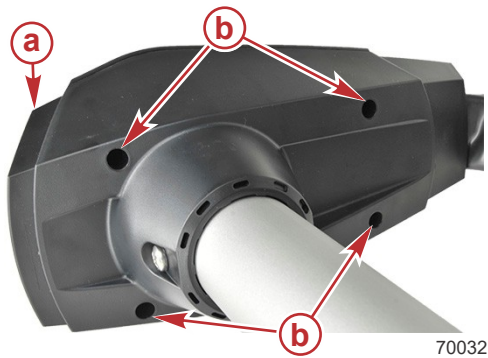
| | | | |
|--|------|--|-------|
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**3
B**

Top Housing Disassembly—Tour

Top Cover Assembly Removal—Tour

1. Remove the four top cover attaching screws and remove the top cover assembly.



- a - Top cover assembly
- b - Top cover attaching screws (4)

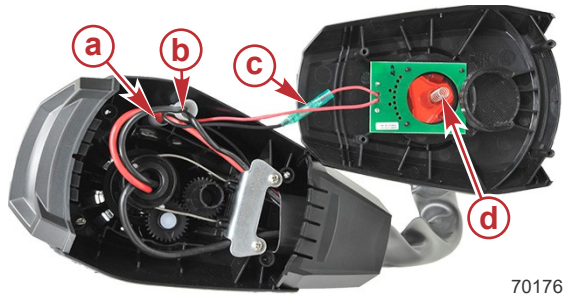
2. Retain the indicator spring.

Wire Disconnection—Tour

1. Carefully pull the wires loose from the top housing.
2. Disconnect the bullet connector.
3. Use an appropriate tool to remove the wire connectors from the following wires:

NOTE: The wire connectors may be difficult to remove. However, removing the wire connectors is preferable to cutting the wires. Cut wires may be too short to be properly reattached, or may limit steering travel.

- Black to black
- Red to red to red



- a - Red (+) wiring connection
- b - Black (-) wiring connection
- c - Bullet connector
- d - Indicator spring



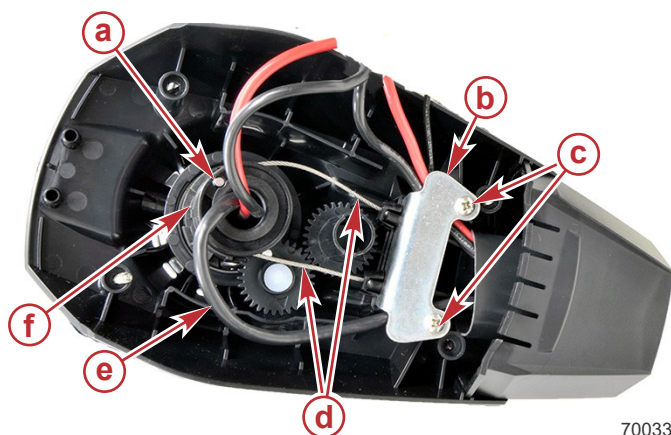
4. Inspect the wires for damage. Repair or replace as necessary.
5. Remove the two screws from the steering cable bracket.

NOTE: Remove the foot pedal plate so that the HD+ universal sonar cable is easier to pull through the wire and steering cable rigging sheath. Refer to **Section 3D - Foot Pedal Disassembly—Tour Pro**.

6. Pull the HD+ universal sonar cable from the wire and steering cable rigging sheath, if equipped.
7. Disconnect the HD+ universal sonar cable, if equipped.
8. If replacing the wires in the wire and steering rigging or the entire wire and steering rigging, continue with **Steering Cables Disconnection—Tour**

Steering Cables Disconnection—Tour

1. Remove the steering cable pulley from the pinion gear.
2. If replacing the steering cables, the wires in the wire and steering rigging, or the entire wire and steering rigging, remove the steering cables from the steering cable pulley.
3. If replacing the steering cables, the wires in the wire and steering rigging, or the entire wire and steering rigging, pinch the steering cable tabs and remove the steering cables from the steering cable bracket.



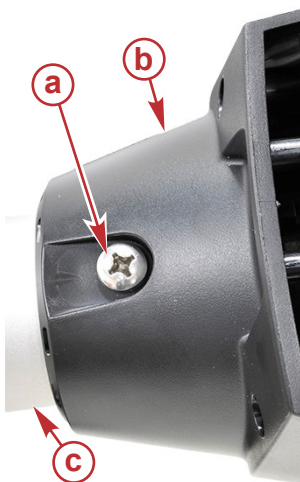
- a - Steering cable pulley
- b - Steering cable bracket
- c - Steering cable bracket screws
- d - Steering cables
- e - HD+ universal sonar cable (some models)
- f - Pinion gear

70033

4. Remove the wire and steering rigging from the top housing base.
5. If replacing the steering cables, the wires in the wire and steering rigging, or the wire and steering rigging, refer to **Section 3D - Foot Pedal Disassembly—Tour** and then continue with **Section 3E - Wire and Steering Rigging Disassembly**

Top Housing Base Removal—Tour

Remove the two screws and the top housing base from the outer column.



- a - Screws (2)
- b - Top housing base
- c - Outer column

70171

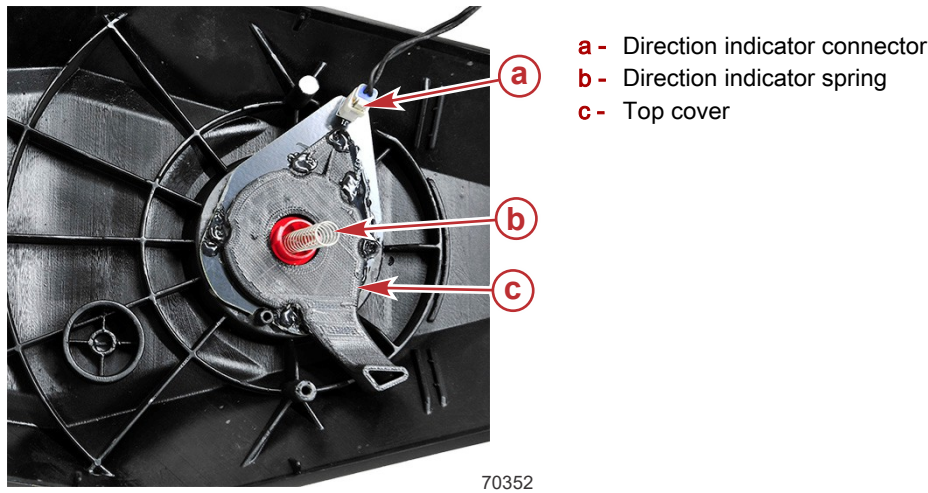
Top Housing Disassembly—Tour Pro

Cover Assembly Removal—Tour Pro

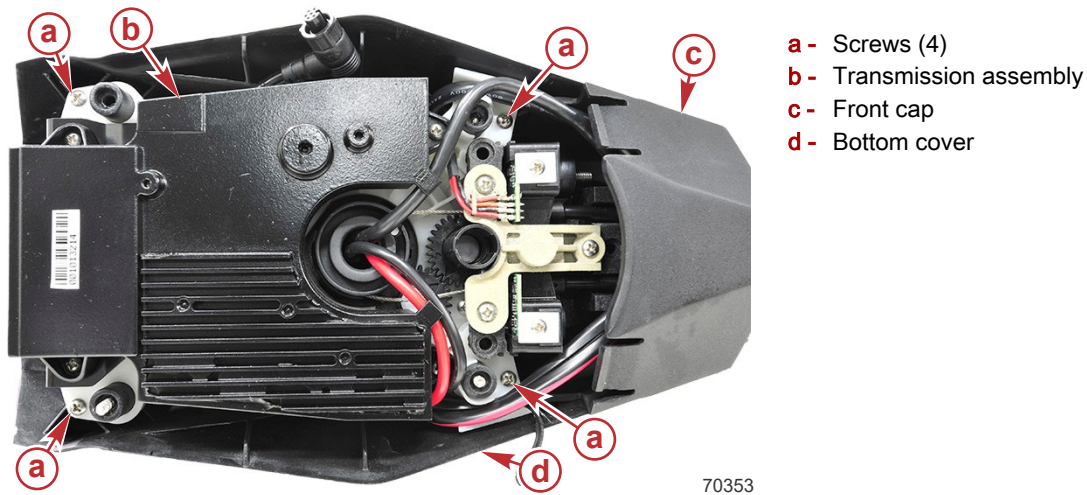
1. Remove the four screws and the top cover assembly from the top housing.



2. Disconnect the direction indicator connector from the top cover. Retain the direction indicator spring.



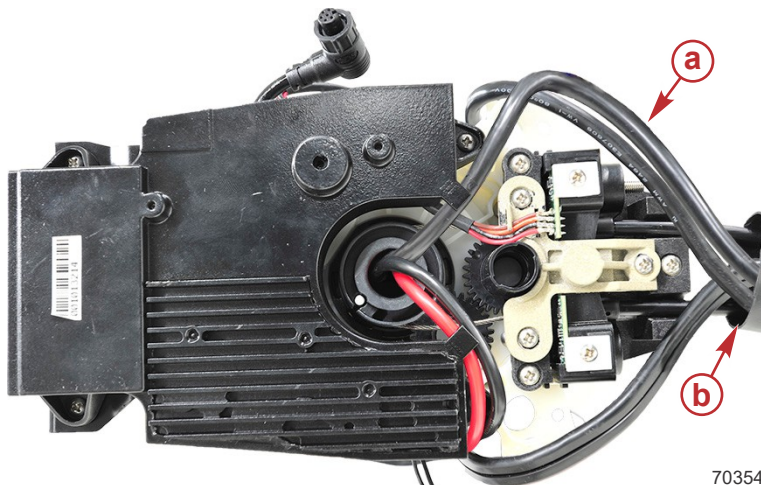
3. Remove the four screws from the transmission and bottom cover.
4. Push the bottom cover away from the transmission assembly.
5. Pull the front cap away from the transmission assembly



GPS/Control Board Removal, Wire Disconnection—Tour Pro

NOTE: Remove the foot pedal plate and loosen the foot pedal retention plate so that the HD+ universal sonar cable is easier to pull through the wire and steering cable rigging sheath. Refer to **Section 3D - Foot Pedal Disassembly—Tour Pro**.

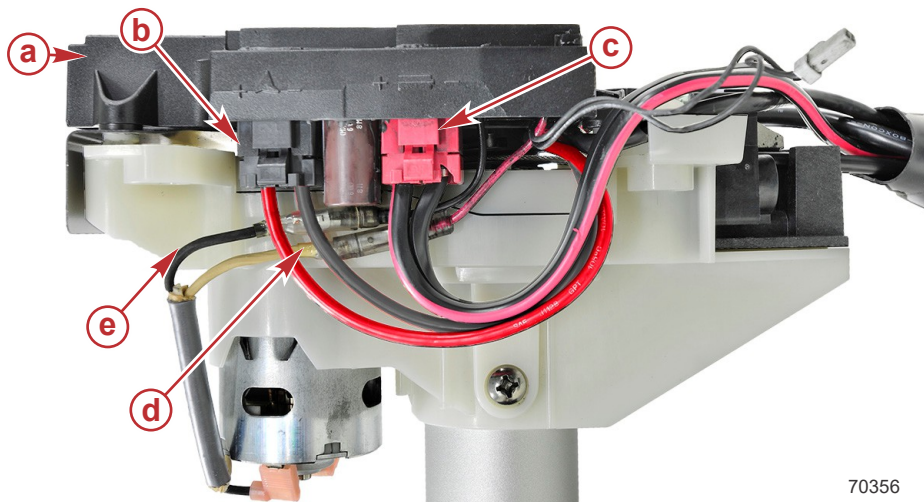
1. Pull the HD+ universal sonar cable from the wire and steering cable rigging sheath, if equipped.
2. Disconnect the HD+ universal sonar cable, if equipped.



- a - HD+ universal sonar cable
- b - Wire and steering cable rigging sheath

70354

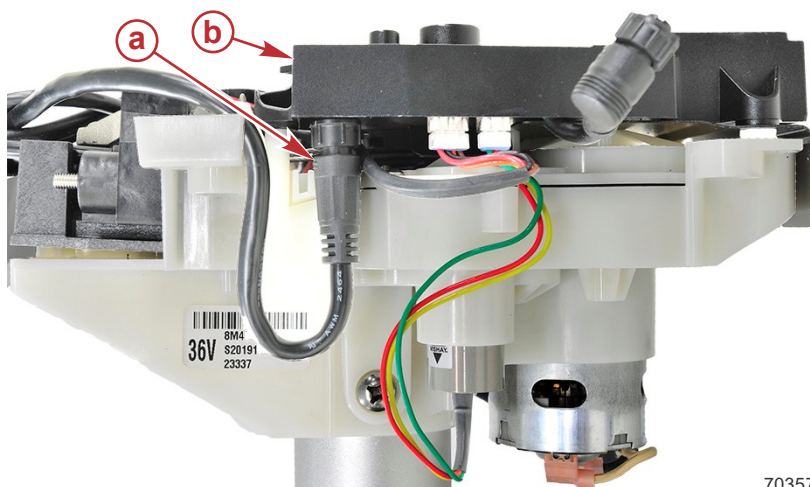
3. Disconnect the red plug foot pedal wires from the GPS/control board unit.
4. Disconnect the black plug lower unit wires from the GPS/control board unit.
5. Disconnect the black and white wire bullet connectors.



- a - GPS unit
- b - Black plug lower unit wires
- c - Red plug foot pedal wires
- d - White wire bullet connector
- e - Black wire bullet connector

70356

6. Disconnect the communications cable from the GPS/control board unit.

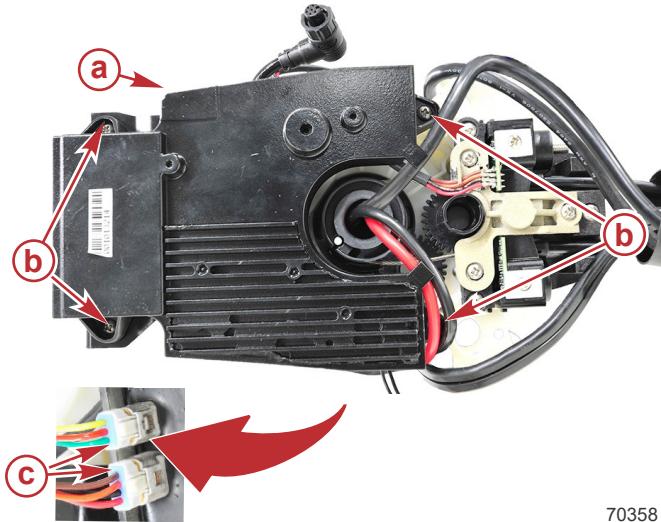


- a - Communications cable
- b - GPS/control board unit

70357

Top Housing

7. Remove the four screws and GPS/control board unit from the transmission.
8. Disconnect the two wire connectors from the GPS/control board unit.



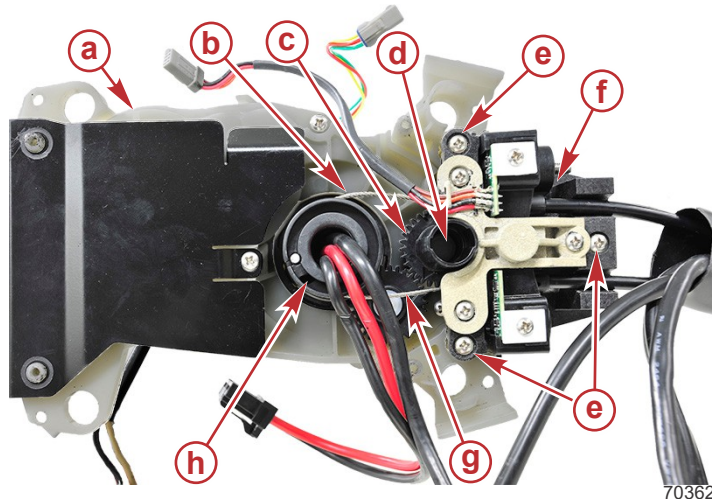
- a - GPS/control board unit
- b - Screw (4)
- c - Wire connectors (2)

70358

Steering Cables Disconnection—Tour Pro

Additional guidance is available to remove the sensor module. Refer to [MotorGuide Tour Pro Sensor Module Service Kit](#)

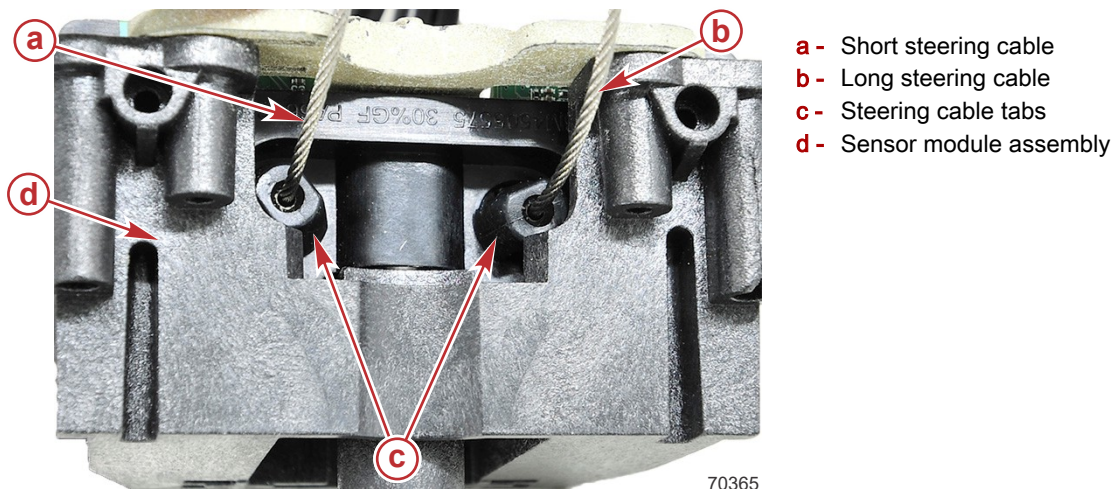
1. Remove the indicator gear and plastic push rivet from the transmission.
2. Remove the steering cable pulley from the gear.
3. Remove the three sensor module assembly screws and the sensor module assembly from the transmission.
4. Remove the long and short steering cables from the steering cable pulley.



- a - Transmission
- b - Short steering cable
- c - Indicator gear
- d - Plastic push rivet
- e - Sensor module assembly screws (3)
- f - Sensor module assembly
- g - Long steering cable
- h - Steering cable pulley

70362

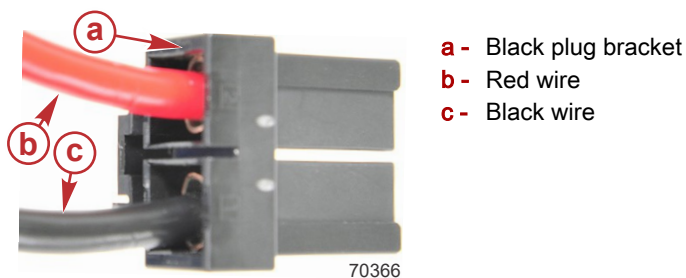
- Pinch the steering cable tabs and remove the long and short steering cables from the sensor module assembly.



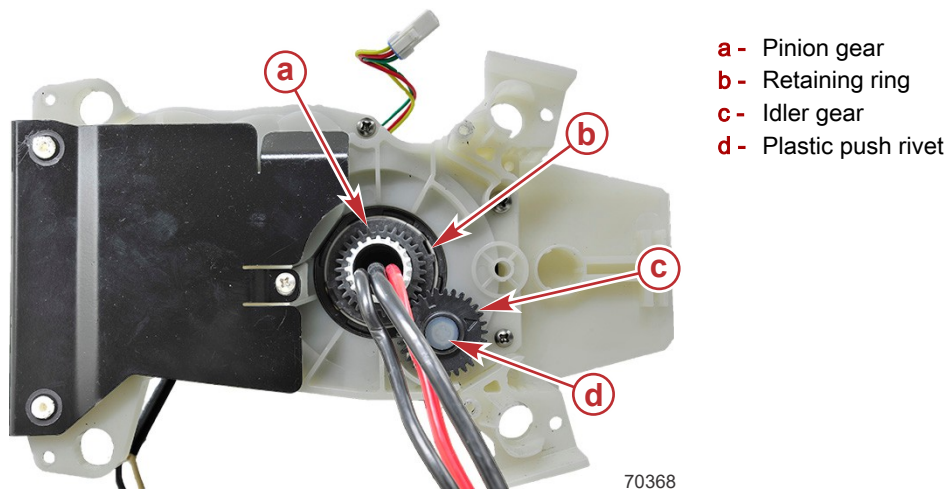
- If replacing the steering cables, the wires in the wire and steering rigging, or the wire and steering rigging, refer to **Section 3D - Foot Pedal Disassembly—Tour Pro** and then continue with **Section 3E - Wire and Steering Rigging Disassembly**

Transmission Removal—Tour Pro

- Remove the red and black wires from the black plug bracket.

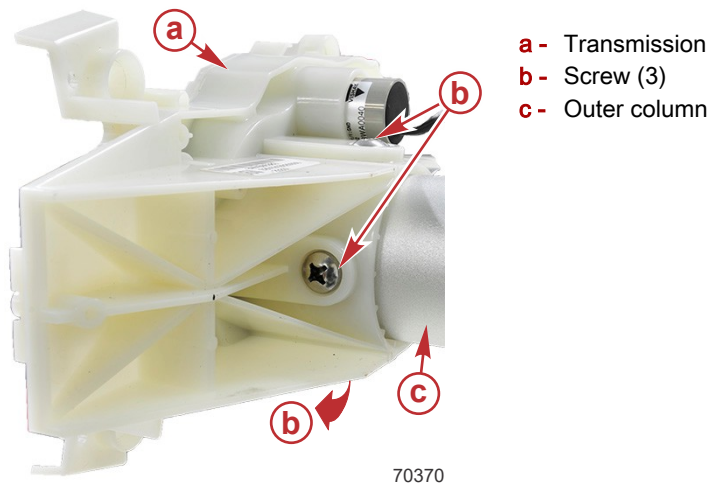


- Remove the idler gear and plastic push rivet from the transmission.
- Pry the retaining ring from the pinion gear.



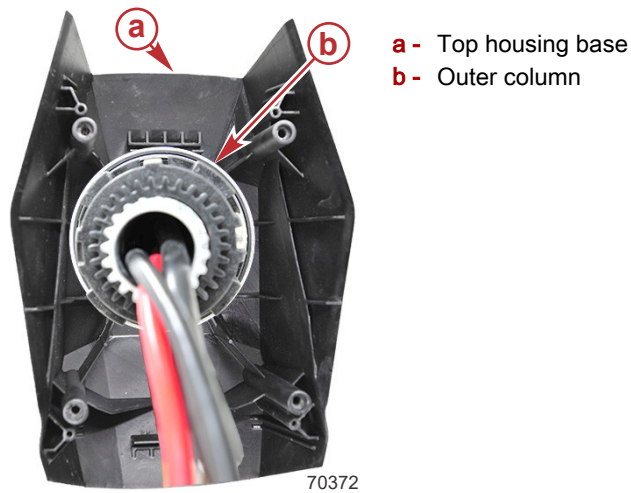
Top Housing

4. Remove the three screws and the transmission from the outer column.



Top Housing Base Removal—Tour Pro

1. Remove the top housing base from the outer column.

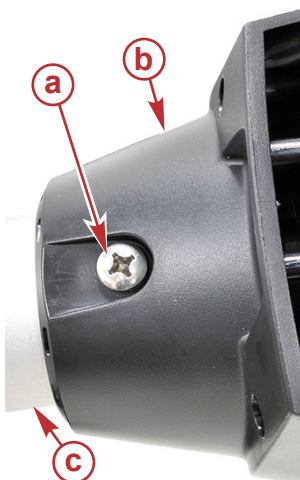


Top Housing Assembly—Tour

Top Housing Base Installation—Tour

1. Install the two screws and top housing base on the outer column.
2. Tighten the two screws to the specified torque.

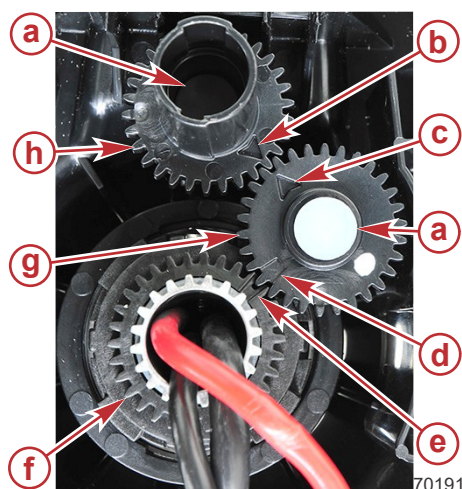
| Description | Nm | lb-in. | lb-ft |
|-------------|------|--------|-------|
| Screw (2) | 2.75 | 24.3 | - |



- a - Screws (2)
- b - Top housing base
- c - Outer column

70171

3. Make sure the gears are aligned, remove the plastic push rivets from the indicator gear and idler gear.
4. Make sure the pinion gear notch is aligned with the idler gear notch.
5. Make sure the indicator gear arrow is aligned with the idler gear arrow.
6. Install the plastic push rivets in the idler gear and indicator gear.

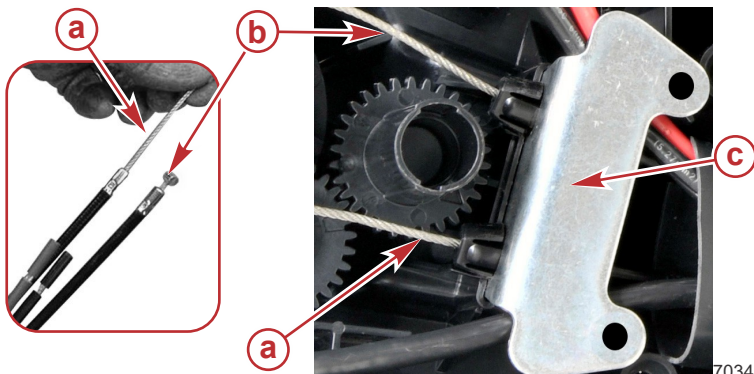


- a - Plastic push rivet
- b - Indicator gear arrow
- c - Idler gear arrow
- d - Idler gear notch
- e - Pinion gear notch
- f - Pinion gear
- g - Idler gear
- h - Indicator gear

70191

Steering Cables Connection—Tour

1. **IMPORTANT:** Make sure the steering cables are not twisted inside the wire and steering rigging sheath.
2. If replacing the steering cables, assemble the wire and steering rigging, refer to **Section 3E - Wire and Steering Rigging Assembly**. Then install the steering cables in the foot pedal. Refer to **Section 3D - Foot Pedal Assembly—Tour**.
3. With the pedal pad held horizontal and parallel to the ground, install the long and short steering cables through the steering cable bracket.

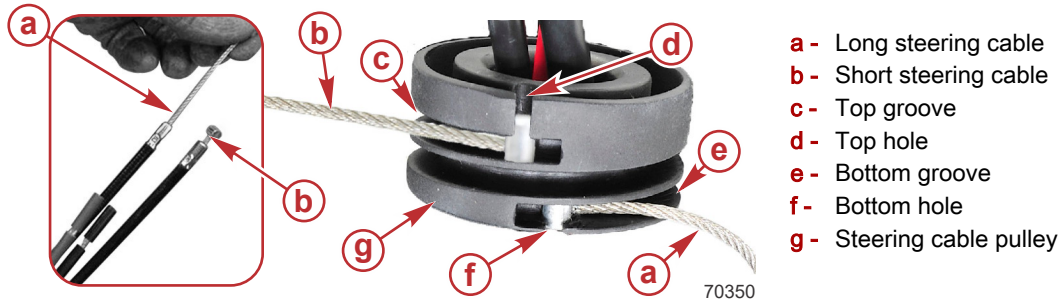


- a - Long steering cable
- b - Short steering cable
- c - Strain bracket

70349

Top Housing

4. Insert the swaged end of the short steering cable into the bottom hole of the steering cable pulley, and then wrap the short steering cable into the bottom groove. Wind the steering cable pulley clockwise a half turn.
5. Hold the short steering cable steady, insert the swaged end of the long steering cable into the top hole of the steering cable pulley, and wrap the long steering cable into the top groove.
6. Wind the steering cable pulley counterclockwise a half turn and then pull the long steering cable straight out from the steering cable pulley. When the steering cable pulley is correctly wound, the two steering cables are parallel to each other.



IMPORTANT: Make sure the foot pedal is parallel to the deck surface before installing the steering cable pulley on the pinion gear.



7. Pull the wires through the steering cable pulley and install the steering cable pulley on the pinion gear.

Wire Connection—Tour

1. **NOTE:** If replacing the wires, refer to **Section 3E - Wire and Steering Rigging Assembly** and then continue with **Steering Cables Connection—Tour** before continuing this procedure.
Connect the HD+ universal sonar cable, if equipped.
2. Secure the HD+ universal sonar cable connection with electrical tape.
3. Twist the three black wires together and crimp the black wires with the crimp cap.
4. Twist the two red wires together and crimp the red wires with the crimp cap.
5. Connect the bullet connector.
6. Position the HD+ universal sonar cable along the side of the base housing on opposite side of head from red and black wires and between the steering cable bracket insert and the steering cable bracket screw hole.
7. Position the red and black wires between the steering cable bracket screw hole and the steering cable bracket insert.
8. Position the red and black wires with the crimp caps in the top housing pockets.
9. Install the strain bracket on the head base with the two screws.
10. Tighten the two screws to the specified torque.

| Description | Nm | lb-in. | lb-ft |
|-------------|------|--------|-------|
| Screw (2) | 1.75 | 15.5 | – |

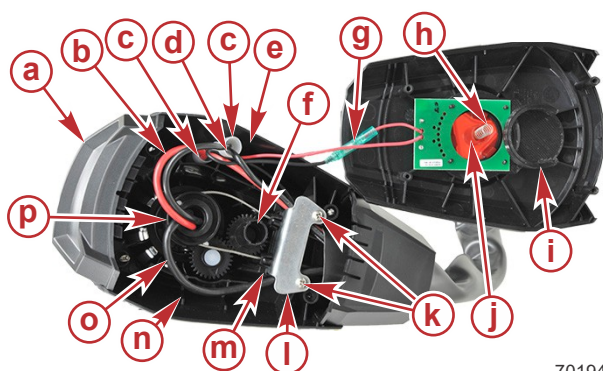
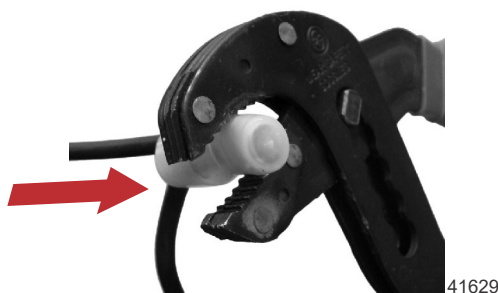
NOTE: Make sure the wires and the HD+ universal sonar cable are positioned through the c-shaped bracket on the steering cable pulley.

11. If replacing the wires, refer to **Section 3D - Foot Pedal Assembly—Tour** for the additional wires installation instructions.

Top Cover Assembly Installation—Tour

1. Install the indicator spring in the indicator gear.
NOTE: Make sure the indicator notches are aligned with the indicator gear notches.
Make sure the indicator aligns with the lower unit.

2. Install the top housing cap on the housing base.



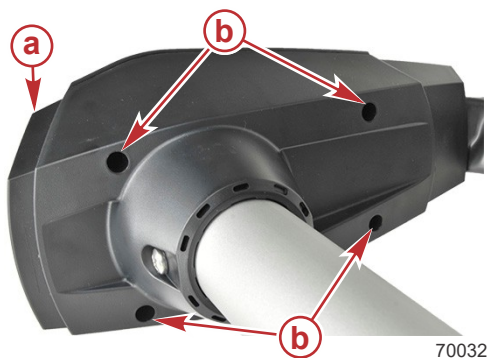
- a - Top housing cap
- b - Red wires
- c - Crimp cap
- d - Black wires
- e - Top housing pockets
- f - Indicator gear notches
- g - Bullet connector
- h - Indicator spring
- i - C-shaped bracket
- j - Indicator notches
- k - Steering cable bracket screws
- l - Steering cable bracket
- m - Steering cable bracket insert
- n - Side of the base housing
- o - HD+ universal sonar cable
- p - Steering cable pulley

70194

NOTE: Make sure the top cover assembly aligns to the housing base and cable harness cap.

3. Install the top cover assembly on the housing base with four screws.
4. Tighten the four screws to the specified torque.

| Description | Nm | lb-in. | lb-ft |
|-------------|------|--------|-------|
| Screw (4) | 1.07 | 9.5 | – |



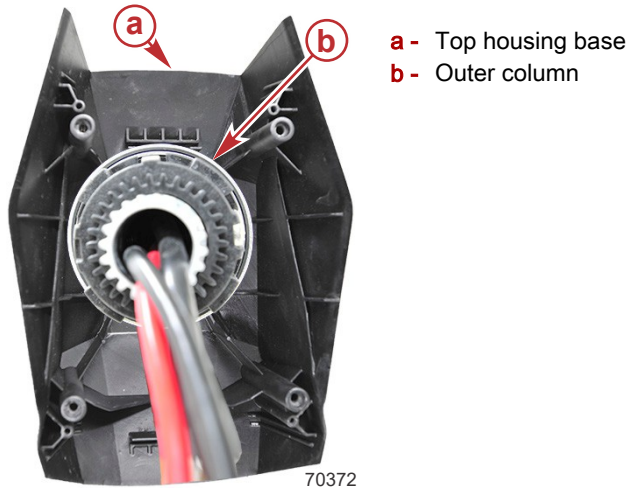
- a - Top cover assembly
- b - Screw (4)

70032

Top Housing Assembly—Tour Pro

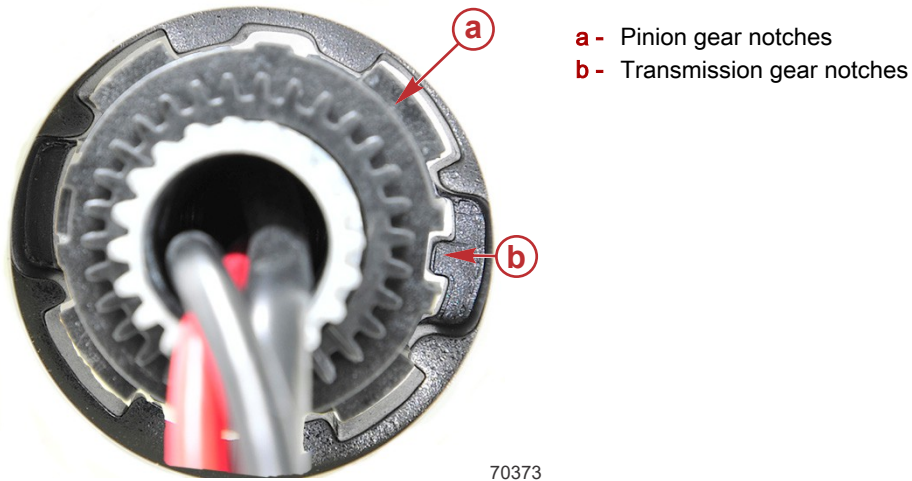
Top Housing Base Installation—Tour Pro

Place the top housing base on the outer column.



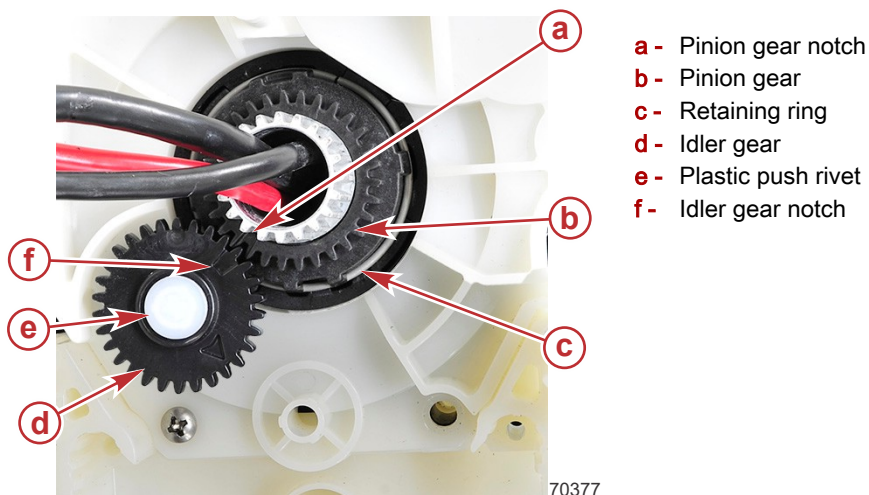
Transmission Installation—Tour Pro

1. Align the transmission gear notches with the pinion gear notches.



2. Install the retaining ring on the pinion gear.
3. Align the idler gear notch with the pinion gear notch.

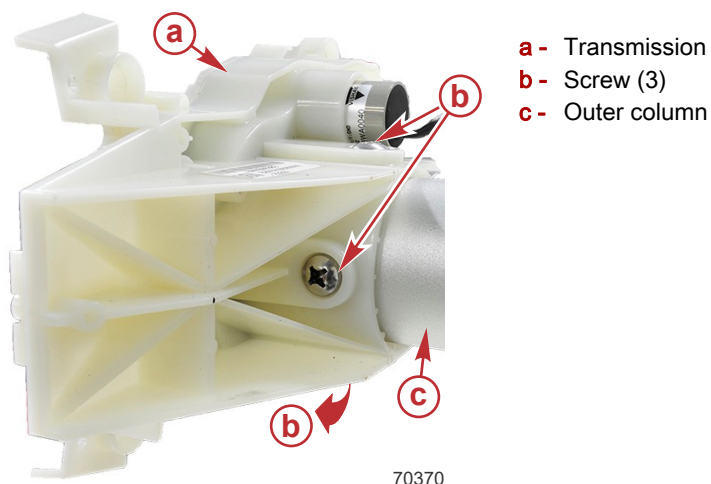
4. Install the idler gear on the transmission with the plastic push rivet.



NOTE: Rotate the outer column to align the screw holes. The transmission and gear notches need to remain pointing toward the back of the transmission during this process as shown in the above image.

5. Install the three screws on the transmission and outer column.
6. Tighten the three screws to the specified torque.

| Description | Nm | lb-in. | lb-ft |
|-------------|------|--------|-------|
| Screw (3) | 2.75 | 24.3 | – |



Steering Cables Connection—Tour Pro

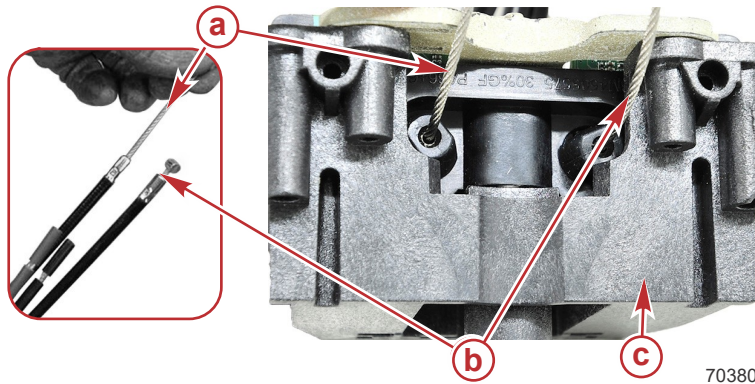
Additional guidance to install the sensor module is available. Refer to [MotorGuide Tour Pro Sensor Module Service Kit](#).

IMPORTANT: Make sure the steering cables are not twisted inside the wire and steering cable rigging sheath.

1. If replacing the steering cables, refer to **Section 3D - Foot Pedal Assembly—Tour Pro** to install the steering cables in the foot pedal.

Top Housing

- Install the long and short steering cables through the sensor module assembly.

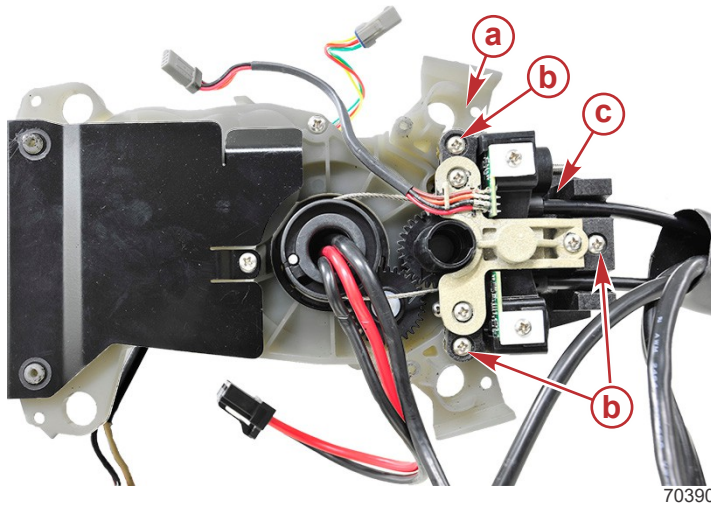


- a - Short steering cable
- b - Long steering cable
- c - Sensor module assembly

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- Install the sensor module assembly on the transmission with the three sensor module assembly screws.
- Tighten the three sensor module assembly screws to the specified torque.

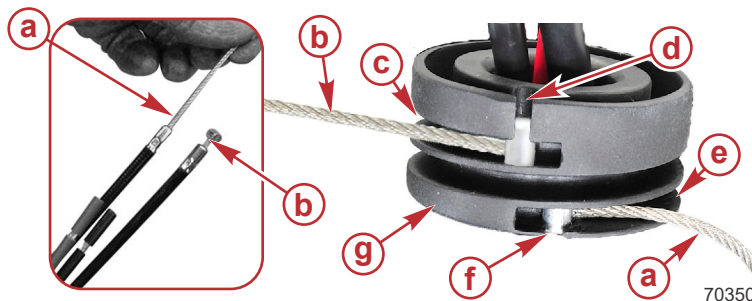
| Description | Nm | lb-in. | lb-ft |
|-----------------------------------|----|--------|-------|
| Sensor module assembly screws (3) | 2 | 18 | - |



- a - Transmission
- b - Sensor module assembly screws (3)
- c - Sensor module assembly

70390

- Insert the swaged end of the long steering cable into the bottom hole of the steering cable pulley and then wrap the long steering cable into the bottom groove. Wind the steering cable pulley clockwise a half turn.
- Hold the long steering cable steady, insert the swaged end of the short steering cable into the top hole of the steering cable pulley, and then wrap the short steering cable into the top groove.
- Wind the steering cable pulley counterclockwise a half turn and then pull the short steering cable straight out from the steering cable pulley. When the steering cable pulley is correctly wound, the two steering cables are parallel to each other.



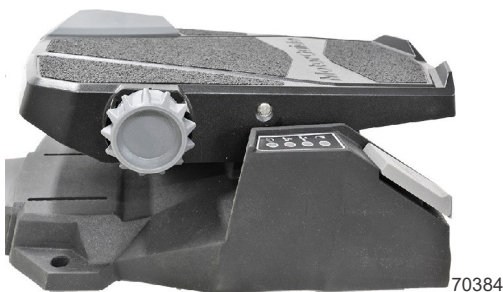
- a - Long steering cable
- b - Short steering cable
- c - Top groove
- d - Top hole
- e - Bottom groove
- f - Bottom hole
- g - Steering cable pulley

70350

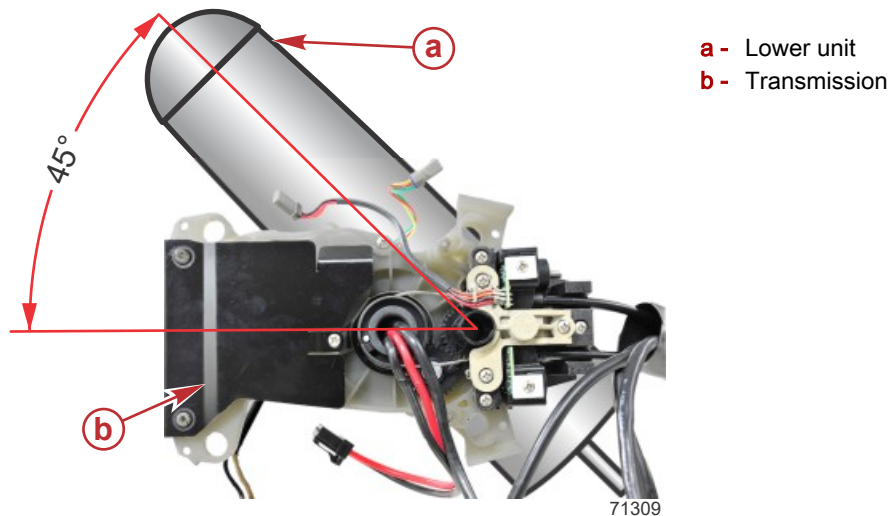
NOTICE

Failure to properly align the lower unit while the foot pedal is parallel to the deck will affect steering ability on the Tour Pro.

IMPORTANT: Make sure the foot pedal is parallel to the deck surface and the lower unit is positioned 45 degrees clockwise of the transmission before installing the steering cable pulley on the pinion gear.

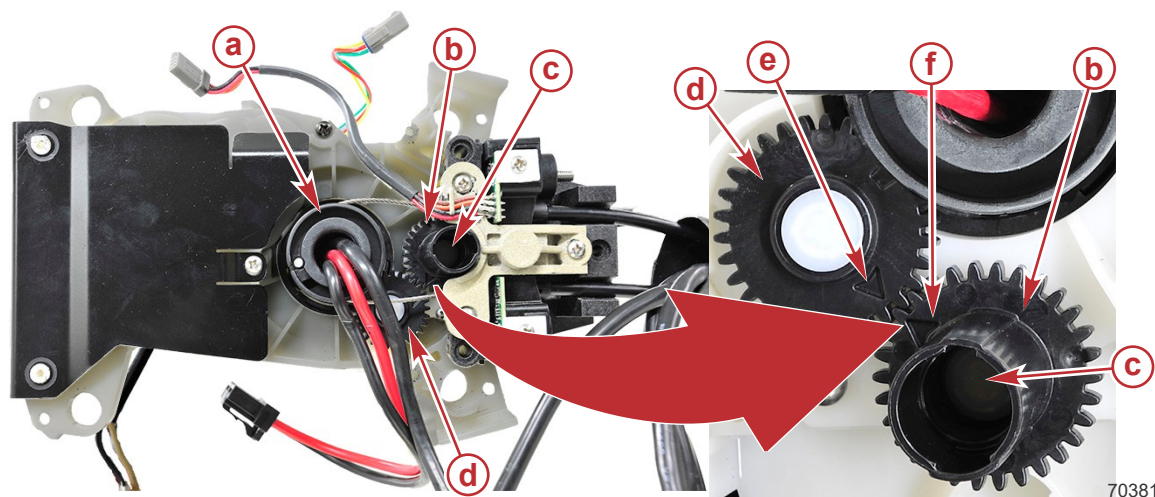


Foot pedal



- a - Lower unit
- b - Transmission

8. Pull the wires through the steering cable pulley and install the steering cable pulley on the pinion gear.
9. Align the indicator gear arrow with the idler gear arrow and install the indicator gear on the transmission with the plastic push rivet.



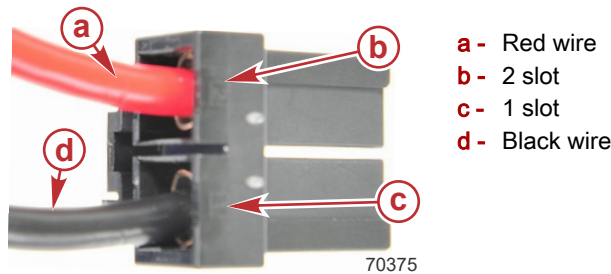
- a - Steering cable pulley
- b - Indicator gear
- c - Plastic push rivet
- d - Idler gear
- e - Idler gear arrow
- f - Indicator gear arrow

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GPS/Control Board Installation, Wire Connection—Tour Pro

IMPORTANT: If replacing the GPS/Control board on the Tour Pro, the Tour Pro must be calibrated after installation. Refer to **GPS/Control Board Calibration—Tour Pro**.

1. Install the black wire into the 1 slot on the plug bracket.
2. Install the red wire into the 2 slot on the plug bracket.



3. Connect the two wire connectors to the GPS/Control board.

IMPORTANT: To avoid interference with the steering cables, make sure the lower unit wires are positioned under the tab nearest the idler gear and the HD+ sonar cable is positioned under the tab nearest the indicator gear.

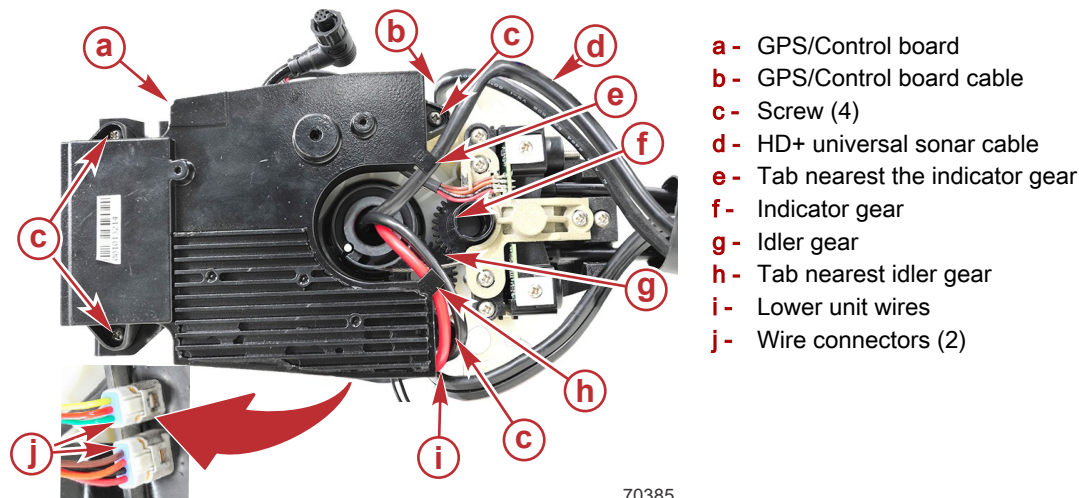
Make sure the GPS/Control board cable is positioned away from the transmission.

4. Install the GPS/Control board on the transmission with the four screws.
5. Tighten the four screws to the specified torque.

| Description | Nm | lb-in. | lb-ft |
|-------------|----|--------|-------|
| Screw (4) | 1 | 9 | - |

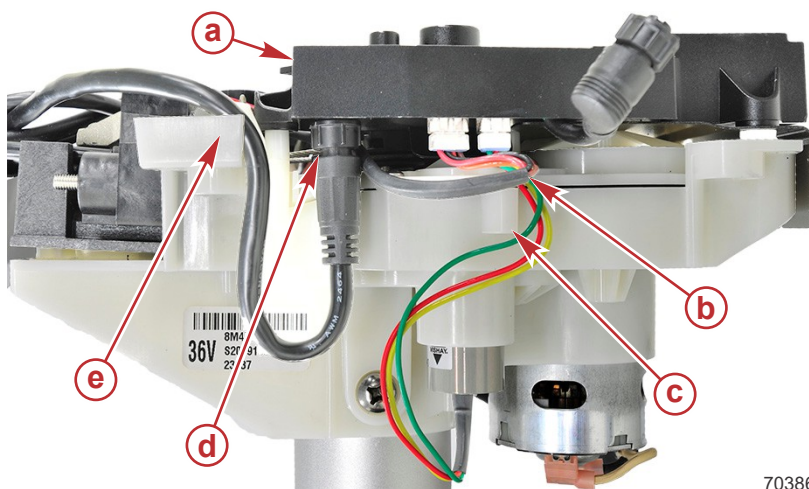
NOTE: Remove the foot pedal plate and loosen the foot pedal retention plate so that the HD+ universal sonar cable is easier to pull through the wire and steering cable rigging sheath. Refer to **Section 3D- Foot Pedal Disassembly—Tour Pro**.

6. Connect the HD+ universal sonar cable and push the HD+ universal sonar cable into the wire and steering cable rigging sheath.



7. Connect the communications cable to the GPS/Control board.
8. Route the GPS/Control board cable inside the horizontal transmission guide.

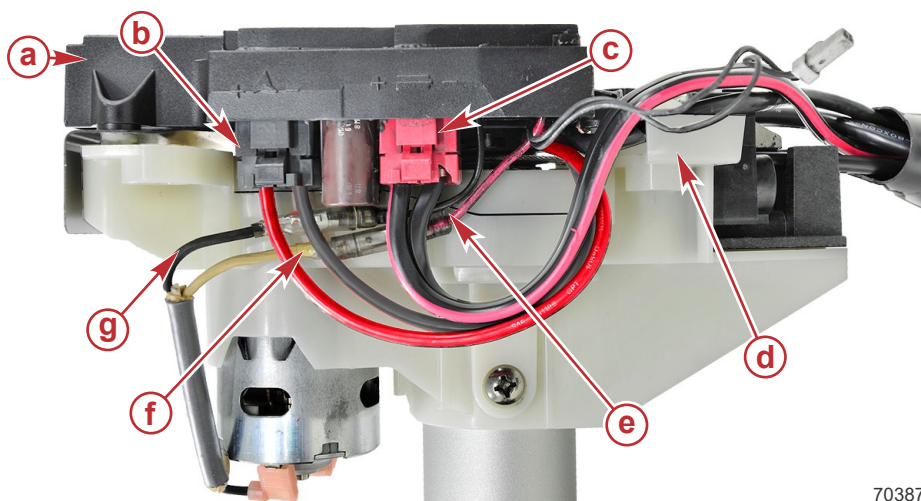
9. Route the encoder wires inside the vertical transmission guide.



- a - GPS/Control board
- b - Encoder wires
- c - Vertical transmission guide
- d - Communications cable
- e - Horizontal transmission guide

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10. Connect the black wire bullet connectors.
11. Connect the white wire bullet connector to the red wire bullet connector.
12. Connect the black plug lower unit wires to the GPS/Control board.
13. Connect the red plug foot pedal wires to the GPS/Control board.
14. Route the red plug foot pedal wires inside the horizontal transmission guide.



- a - GPS/Control board
- b - Black plug lower unit wires
- c - Red plug foot pedal wires
- d - Horizontal transmission guide
- e - Red wire bullet connector
- f - White wire bullet connector
- g - Black wire bullet connector

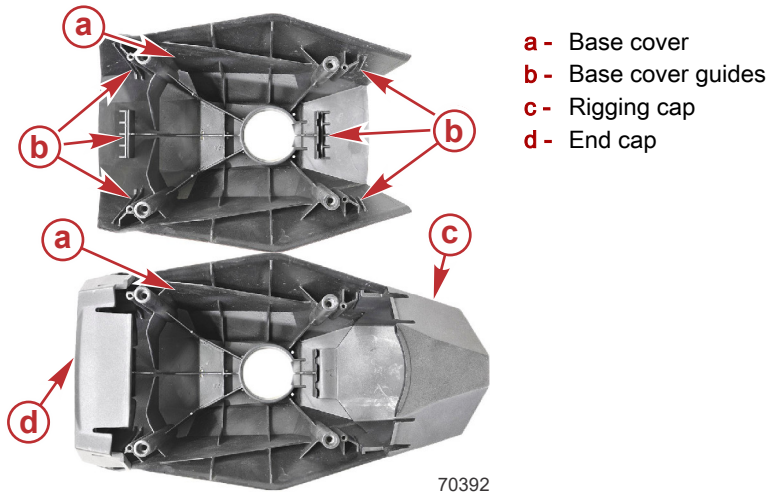
70387

Cover Assembly Installation—Tour Pro

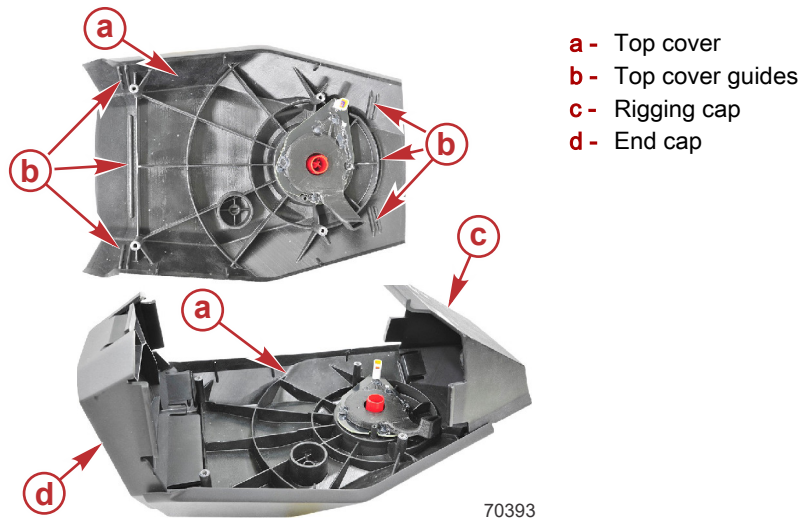
1. Observe how the top cover assembly is put together.

Top Housing

- a. The end cap and the rigging cap fit into the base cover guides.



- b. The top cover guides fit into the end cap and the rigging cap.



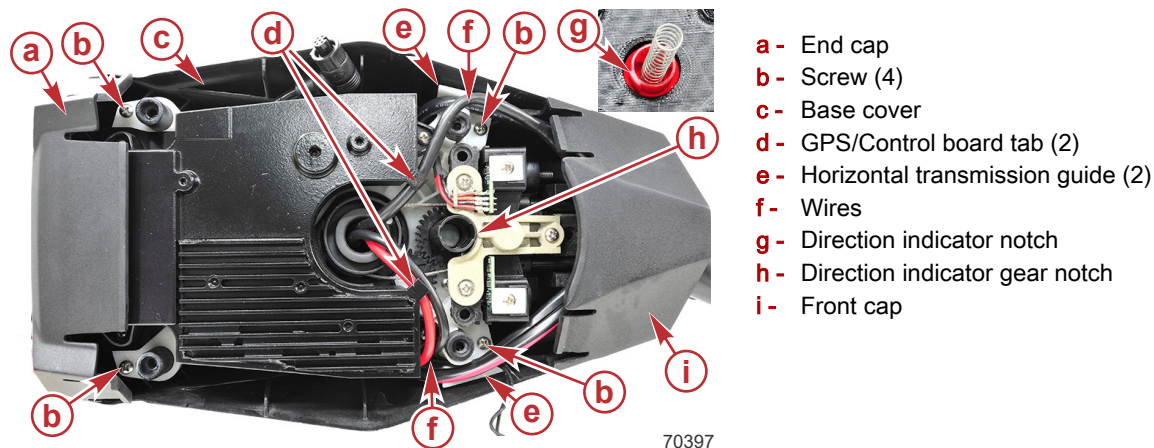
2. Position the front cap on the transmission.
3. Install the base cover on the transmission with the four screws.
4. Tighten the four screws to the specified torque.

| Description | Nm | lb-in. | lb-ft |
|-------------|----|--------|-------|
| Screw (4) | 1 | 9 | - |

- Position the end cap on the base cover.

IMPORTANT: Make sure the direction indicator notch and direction indicator gear are aligned.

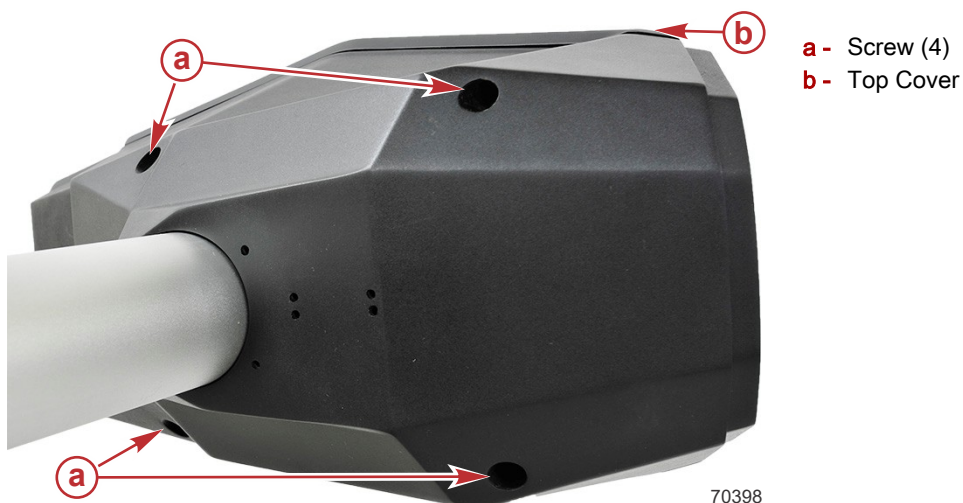
Make sure the wires are positioned away from the direction indicator gear, under the GPS/Control board tabs, and along the horizontal transmission guides.



- a - End cap
- b - Screw (4)
- c - Base cover
- d - GPS/Control board tab (2)
- e - Horizontal transmission guide (2)
- f - Wires
- g - Direction indicator notch
- h - Direction indicator gear notch
- i - Front cap

- Install the top cover on the base cover with the four screws.
- Tighten the four screws to the specified torque.

| Description | Nm | lb-in. | lb-ft |
|-------------|----|--------|-------|
| Screw (4) | 1 | 9 | - |



- a - Screw (4)
- b - Top Cover

GPS Center Alignment Calibration—Tour Pro

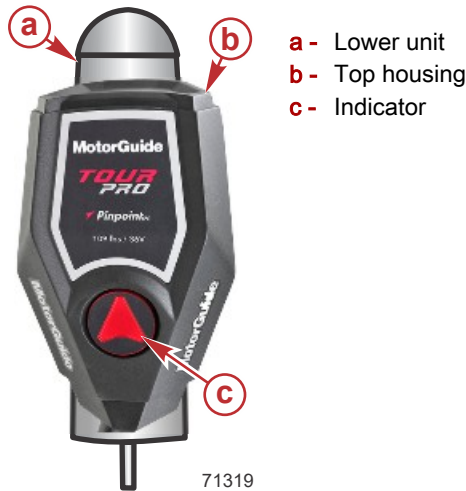
Complete the calibration if the main controller or the foot pedal assembly is replaced.

IMPORTANT: The thrust motor must be off. The trolling motor system must be on.

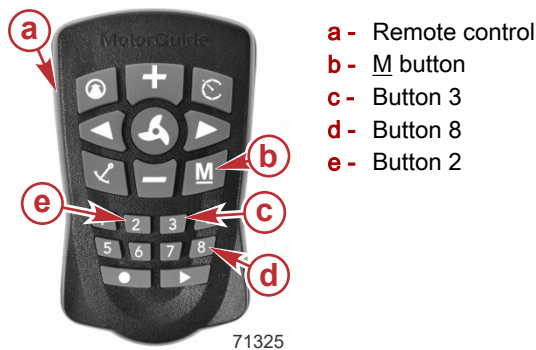
- Deploy the motor.

Top Housing

2. Align the lower unit and the indicator on the top housing.



3. Use synced remote (if remote not synced, press left and right arrow simultaneously within first 10 seconds of trolling motor system start up) Using the remote control, hold the **M** button, and press button **2**, button **8**, and button **3** until the motor beeps. The calibration is complete.



Foot Pedal End-of-Travel Calibration

⚠ CAUTION

Avoid injury or property damage due to unintended operation. Objects restricting foot pedal movement and power assisted steering can have a negative affect on GPS-guided modes. Ensure that the foot pedal area is free and clear of obstructions and that the trolling motor can steer 360 degrees in both directions using the wireless remote before entering a GPS-guided mode. Be mindful of objects close to the trolling motor and foot pedal, and use care when operating the trolling motor in GPS-guided mode.

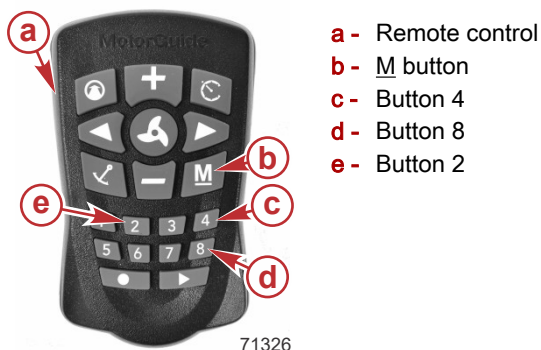
IMPORTANT: The thrust motor must be off. The trolling motor system must be powered on.

1. Deploy the motor.
2. Rotate the foot pedal to the neutral position.



NOTE: After pressing the remote control buttons, the foot pedal will drive automatically heel down for 3 seconds. Then the foot pedal will drive automatically to the toe down position, pause, then releases tension on system and beeps. Then the foot pedal will drive automatically to the heel down position, pause, then releases tension on system and beeps. Unit should remain at heel down upon completion of the calibration.

- Using the remote control hold the M button, and press button **2**, button **8**, and button **4**.
- Release the M button.



- After the foot pedal has come to rest for more than ten seconds. Unplug and cycle power to the trolling motor for at least ten seconds.
- The end-of-travel calibration is complete, and the trolling motor is ready for normal use.

NOTE: End-of-travel calibration may need to be repeated after extended use of the trolling motor.

IMPORTANT: If the trolling motor will not steer 360 degrees with the wireless remote, refer to the nearest service provider or owner service assistance prior to using GPS guided modes.

- Test the trolling motor by steering the lower unit with a synced wireless remote.

NOTE: The trolling motor should steer from max toe down to max heel down and back without shuddering or pausing.

Sensor Module Calibration—Tour Pro

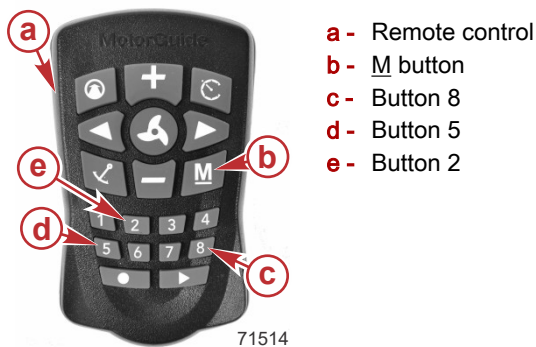
IMPORTANT: Be certain the thrust motor is off. Complete Calibration **ONLY** if a sensor module or the foot pedal assembly is replaced.

- Deploy the motor.
- Position foot pedal halfway between neutral and heel down.

NOTE: Upon pressing the remote control buttons, the foot pedal will drive automatically to the neutral position, pause, and beep (this is a sensitive calibration so make sure the unit is not bumped during this process). Then the foot pedal will drive automatically to the heel down position, pause, and beeps. Then the foot pedal will drive automatically to the toe down position, pause, and beeps. Unit should remain at toe down upon completion of the calibration. If unit does not calibrate on first attempt, power cycle unit and attempt calibration a second time.

- Using the remote control hold the M button, and press button **2**, button **8**, and button **5**.
- Release the M button.

IMPORTANT: If the trolling motor will not steer 360 degrees with the wireless remote. Refer to Check for Properly Adjusted Cable Tension.



Notes:

Trolling Motor Disassembly and Assembly

Section 3C - Column

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**3
C**

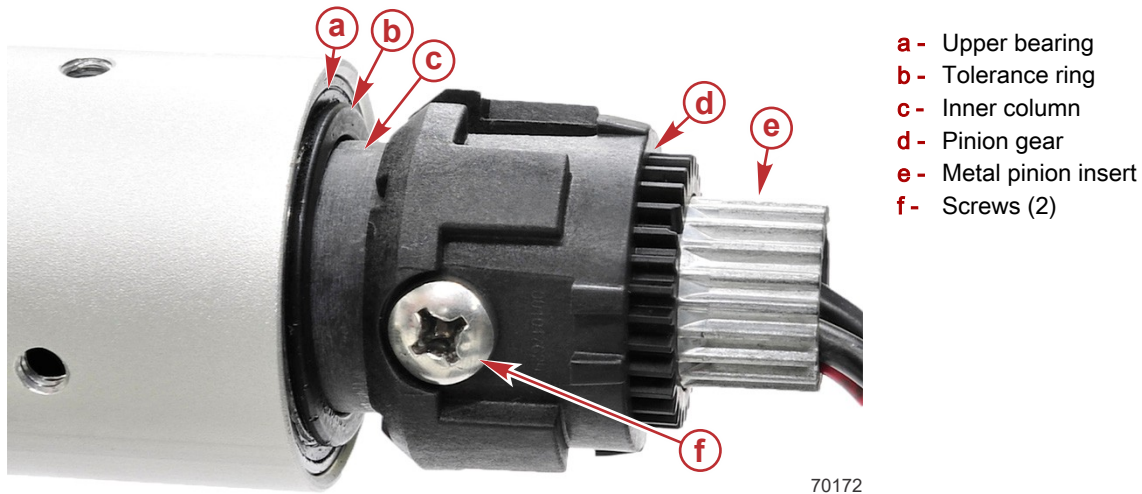
Lubricants, Sealants, Adhesives

| Description | Where Used | Part No. |
|-----------------|---------------|--------------|
| 2-4-C with PTFE | Bearing races | 92-802859A 1 |

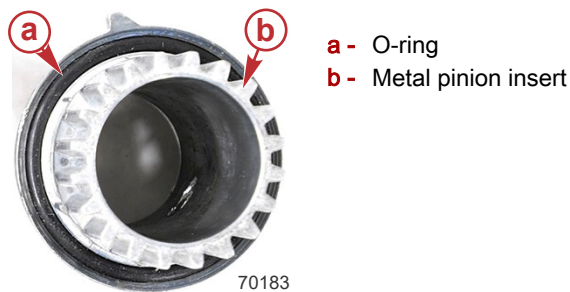
Outer Column Disassembly

Outer Column Removal

1. Remove the top housing assembly. Refer to **Section 3B- Top Housing Disassembly—Tour** or **Section 3B - Top Housing Disassembly—Tour Pro**.
2. Remove the two screws, pinion gear, and metal pinion insert from the inner column.
3. Evenly pry the tolerance ring from the upper bearing.

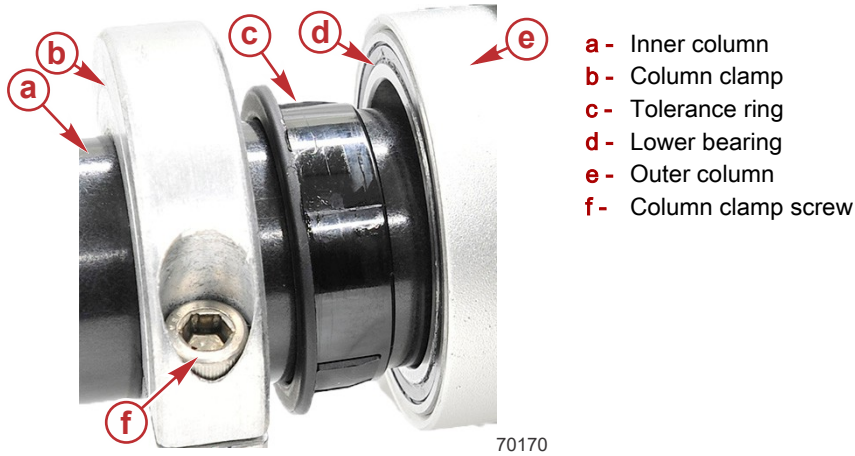


4. Inspect the O-ring on the metal pinion insert for damage. Replace the O-ring if needed.



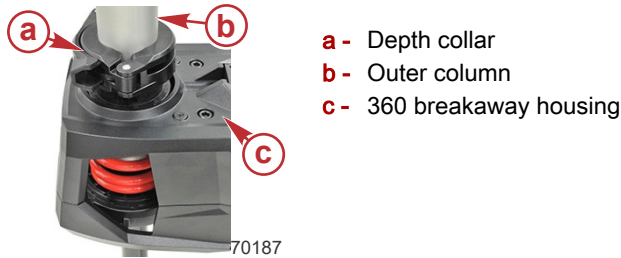
5. Loosen the column clamp screw.
6. Evenly pry the tolerance ring from the lower bearing.

- Remove the outer column, tolerance ring, and column clamp from the inner column.



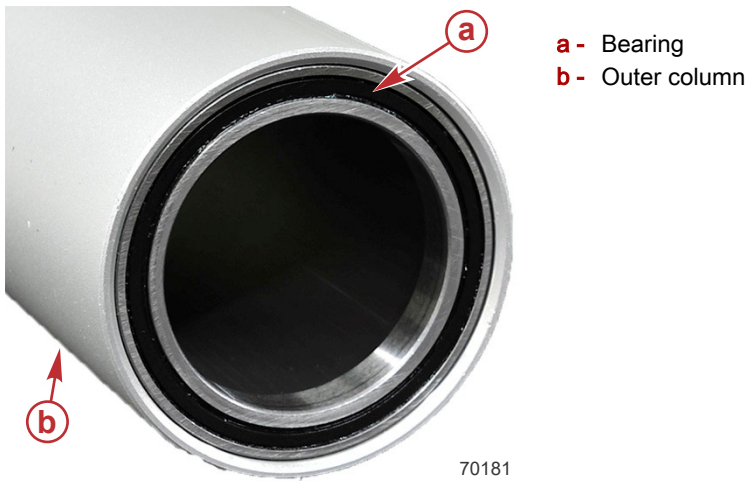
360 Breakaway Housing Removal

- Remove the steering system from the mount. Refer to **Section 3F - Steering System Removal**.
- Loosen the depth collar and remove the 360 breakaway housing from the outer column.



Bearings Removal

Remove the upper and lower bearings from the ends of the outer column.



Outer Column Assembly

Bearings Installation

- Lubricate the bearing races with 2-4-C with PTFE.

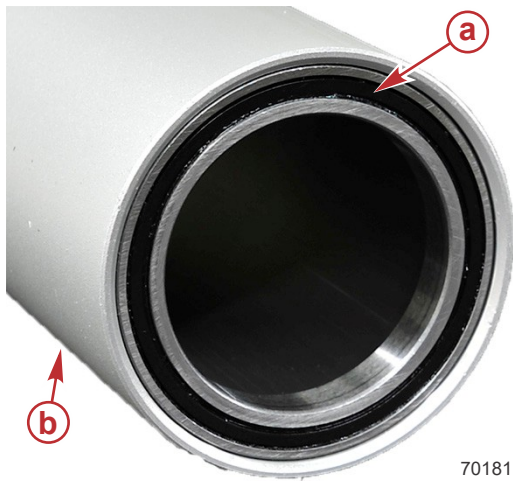
| Description | Where Used | Part No. |
|-----------------|---------------|--------------|
| 2-4-C with PTFE | Bearing races | 92-802859A 1 |



a - Bearing race

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2. Install the upper and lower bearings in the ends of the outer column.

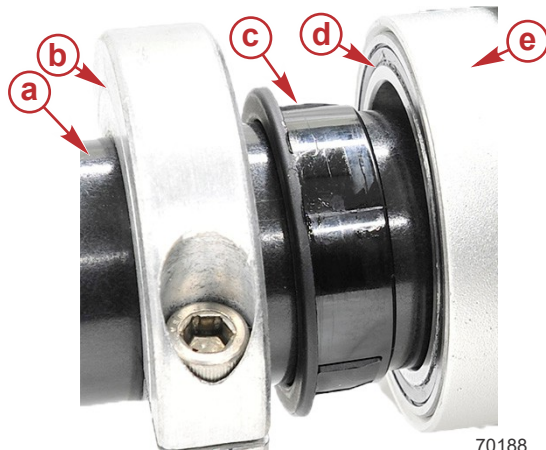


a - Bearing
b - Outer column

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Outer Column Installation

1. Install the column clamp and tolerance ring on the inner column. Do not tighten the column clamp.
IMPORTANT: Make sure the outer column is installed with the screw holes facing away from the lower unit.
2. Install the outer column on the inner column. Do not install the tolerance ring into the lower bearing.

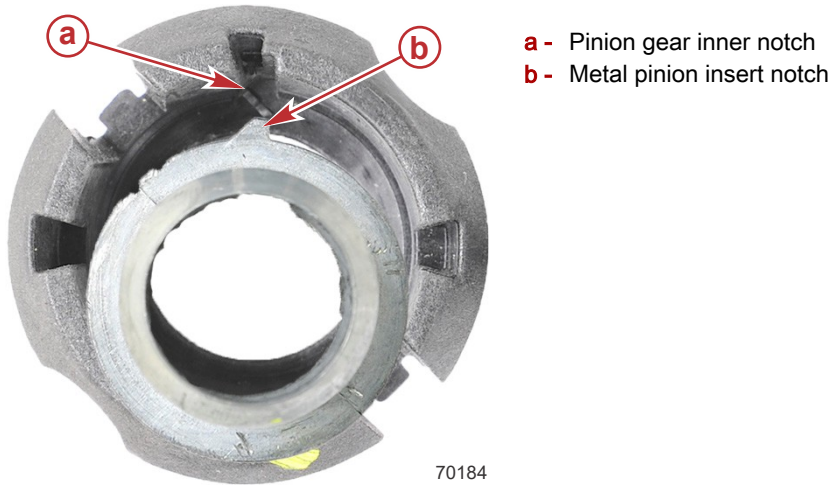


a - Inner column
b - Column clamp
c - Tolerance ring
d - Lower bearing
e - Outer column

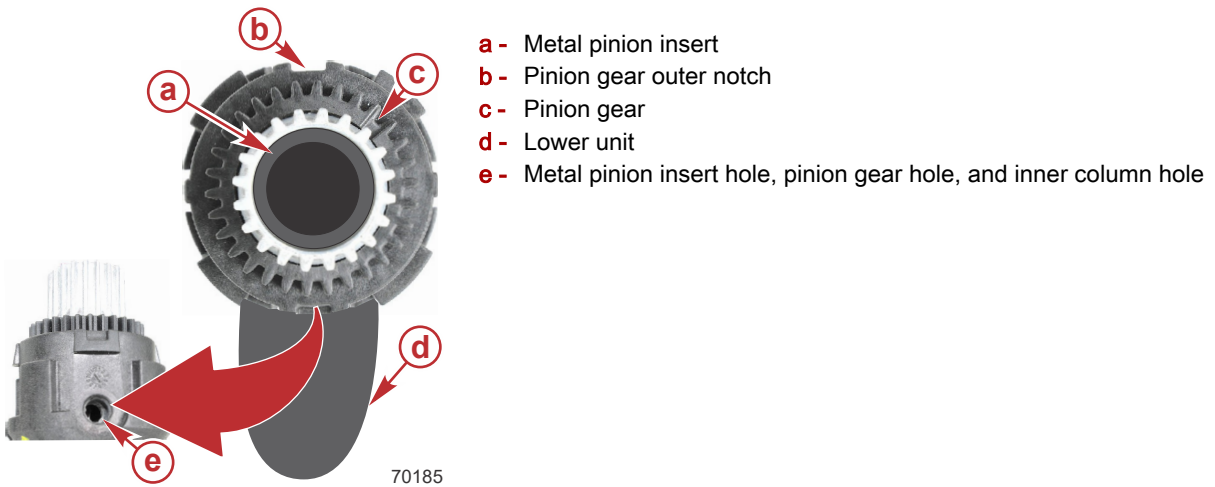
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3. Install the tolerance ring on the inner column. Do not install the tolerance ring into the upper bearing.

- Align the pinion gear inner notch to the metal pinion insert notch.



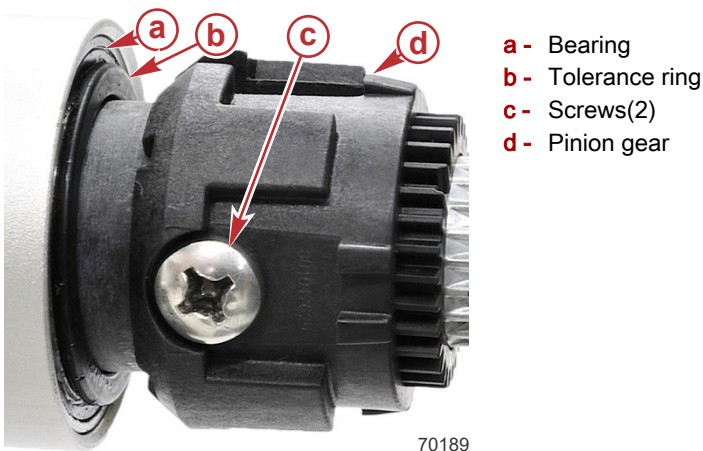
- Install the metal pinion insert on the inner column. Make sure the pinion gear outer notch is facing away from the lower unit.
- Align the metal pinion insert hole and the pinion gear hole to the inner column hole.



- Install the two screws in the pinion gear.
- Tighten the two screws to the specified torque.

| Description | Nm | lb-in. | lb-ft |
|-------------|-----|--------|-------|
| Screw (2) | 2.7 | 24 | - |

- Install the tolerance ring into the upper bearing.

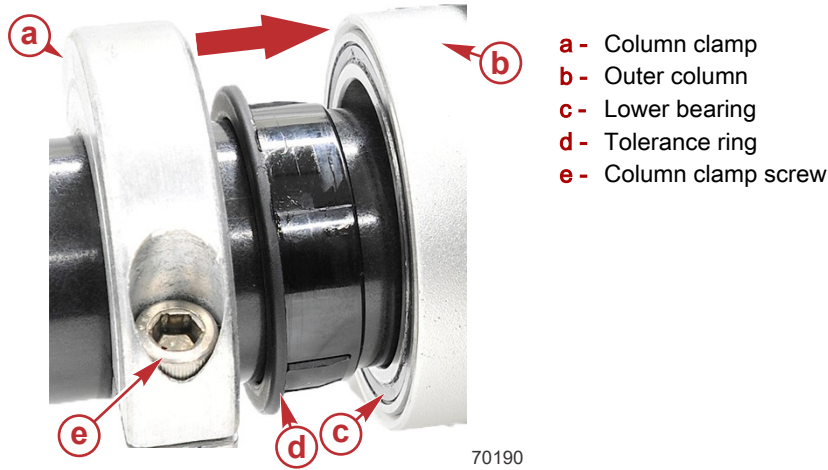


- Install the tolerance ring into the lower bearing.

NOTE: The outer column assembly is positioned correctly when the upper tolerance ring is tight against the pinion and the column clamp is tight against the lower tolerance ring.

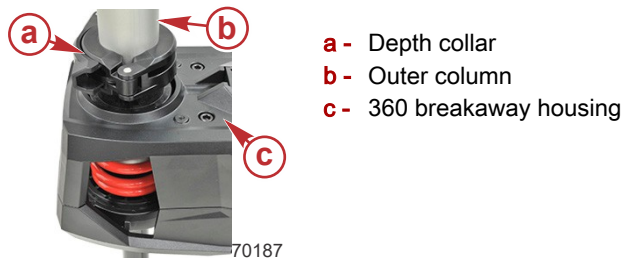
11. Compress the outer column assembly by adjusting the column clamp toward the pinion.
12. Tighten the column clamp screw to the proper specification.

| Description | Nm | lb-in. | lb-ft |
|--------------------|----|--------|-------|
| Column clamp screw | 15 | 132.8 | – |



360 Breakaway Housing Installation

1. Install the 360 breakaway housing on the outer column. Tighten the depth collar on the outer column.



2. Install the steering system on the mount. Refer to the **Section 3F - Steering System Installation**.
3. Install the top housing assembly. Refer to **Section 3B - Top Housing Assembly—Tour** or **Section 3B - Top Housing Assembly—Tour Pro**.

Trolling Motor Disassembly and Assembly

Section 3D - Foot Pedal

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D**

Foot Pedal Disassembly

⚠ WARNING

Performing service or maintenance without first disconnecting the battery can cause product damage, personal injury, or death due to fire, explosion, electrical shock, or unexpected motor starting. Always disconnect the battery cables from the battery before maintaining, servicing, installing, or removing motor components.

Baseplate Removal—Tour

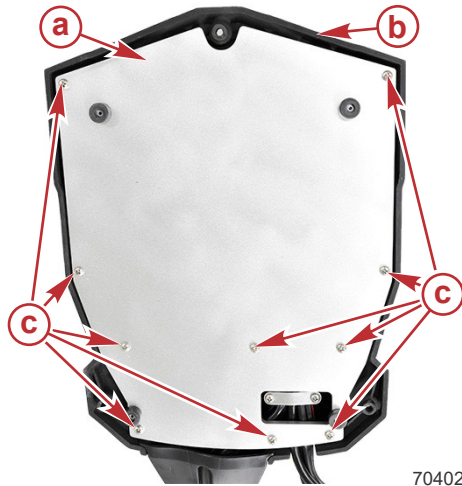
Remove the nine baseplate screws, the clamp plate, four control board screws, and the baseplate from the foot pedal base.



- a** - Baseplate screws (9)
- b** - Control board screws (4)
- c** - Clamp plate
- d** - Foot pedal base
- e** - Baseplate

Baseplate Removal—Tour Pro

1. Remove the ten baseplate screws and the baseplate from the foot pedal base.

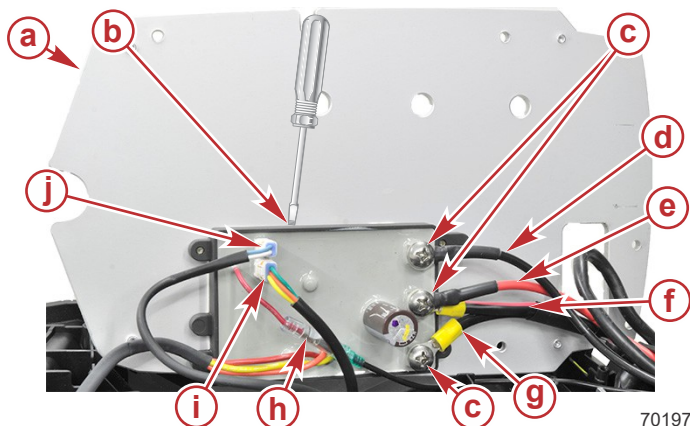


- a** - Baseplate
- b** - Foot pedal base
- c** - Baseplate screws (10)

Control Board Removal—Tour

1. Pry the control board and heat sink pad from the baseplate. Discard the heat sink pad.
2. Remove the screw and the black wire from the control board.
3. Remove the screw, red wire, and red/black wire from the control board.
4. Remove the screw and the yellow capped black wire from the control board.
5. Remove the momentary switch harness connector from the control board.
6. Remove the potentiometer harness connector from the control board.

7. Disconnect the red and black wire bullet connector.

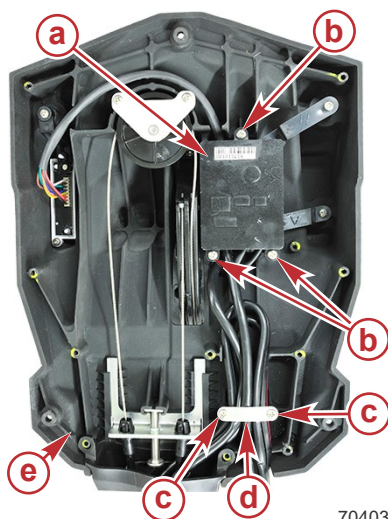


- a - Baseplate
- b - Control board and heat sink pad
- c - Screw (3)
- d - Black wire
- e - Red wire
- f - Red/black wire
- g - Yellow capped black wire
- h - Red and black wire bullet connector
- i - Potentiometer harness connector
- j - Momentary switch harness connector

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Foot Pedal Control Board Removal—Tour Pro

1. Disconnect the NMEA 2000 cable, if connected.
2. Remove the two clamp plate screws and the clamp plate from the foot pedal base.
3. Remove the three control board screws and the foot pedal control board from the foot pedal base.



- a - Foot pedal control board
- b - Control board screw (3)
- c - Clamp plate screw (2)
- d - Clamp plate
- e - Foot pedal base

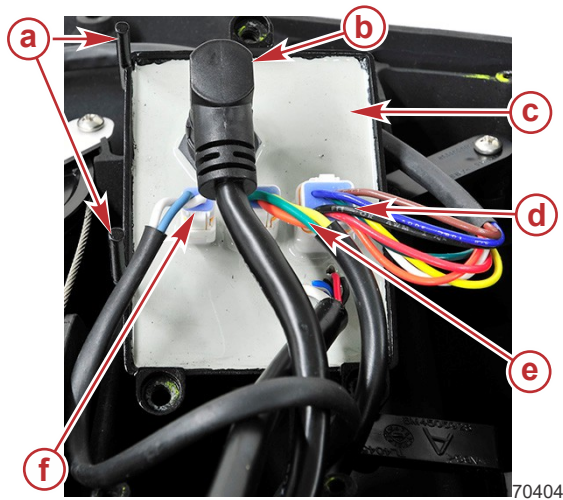
70403

IMPORTANT: Make sure not to break the two control board stability pins while removing the wire connectors from the foot pedal control board.

4. Disconnect the communication cable from the foot pedal control board.
5. Disconnect the momentary switch harness connector from the foot pedal control board.
6. Disconnect the potentiometer harness connector from the foot pedal control board.

Foot Pedal

7. Disconnect the LED board connector from the foot pedal control board.



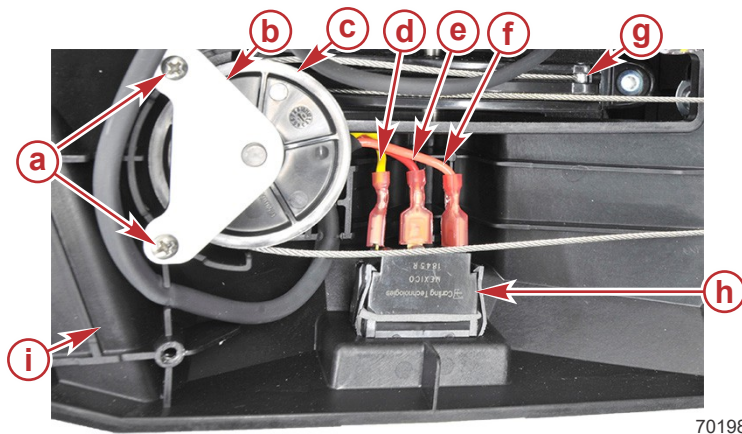
- a** - Control board stability pin (2)
- b** - Communication cable
- c** - Foot pedal control board
- d** - LED board connector
- e** - Potentiometer harness connector
- f** - Momentary switch harness connector

Power Switch Removal—Tour

1. Push the power switch through the foot pedal base.
2. Disconnect the yellow wire from the switch.
3. Disconnect the red wire from the switch.
4. Disconnect the orange wire from the switch.

Steering Cables Removal—Tour/Tour Pro

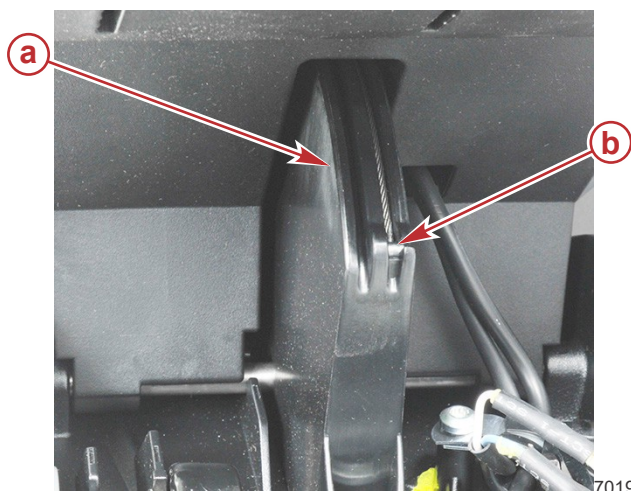
1. Remove the two screws, the keeper plate, and the small steering cable pulley from the foot pedal base.
2. Remove the long steering cable from the large steering cable pulley.



Tour model shown, steering cables for Tour Pro are located in the same positions.

- a** - Screws (2)
- b** - Keeper plate
- c** - Small steering cable pulley
- d** - Yellow wire
- e** - Red wire
- f** - Orange wire
- g** - Long steering cable end
- h** - Switch
- i** - Foot pedal base

- Remove the short steering cable end from the large steering cable pulley.



- a - Large steering cable pulley
- b - Short steering cable end

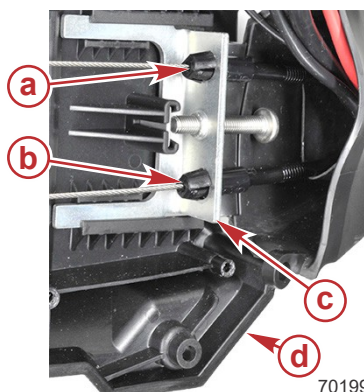
- Remove the long and short steering cables from the tension bracket.
- If replacing the steering cables, refer to **Section 3B - Top Housing Disassembly—Tour** or **Section 3B - Top Housing Disassembly—Tour Pro** and then continue with **Section 3E - Wire and Steering Rigging Disassembly**.

Wire Removal—Tour

If replacing the wires, refer to **Section 3B - Top Housing Disassembly—Tour** or **Section 3B - Top Housing Disassembly—Tour Pro** and then continue with **Section 3E - Wire and Steering Rigging Disassembly**.

Tension Bracket Removal—Tour/Tour Pro

Remove the tension bracket from the foot pedal base.



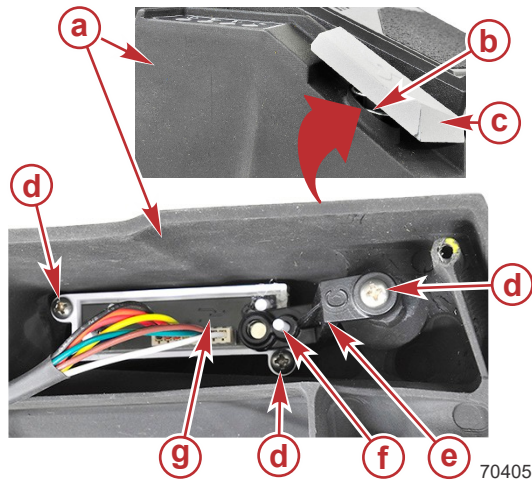
- a - Short steering cable
- b - Long steering cable
- c - Tension bracket
- d - Foot pedal base

LED Dashboard and Prop-on Button Removal—Tour Pro

IMPORTANT: Take care not to break the LED dashboard stability pin while removing the LED dashboard from the foot pedal base.

Foot Pedal

Remove the three screws, the LED dashboard arm, the LED dashboard, the prop-on button, and the prop-on spring from the foot pedal base.



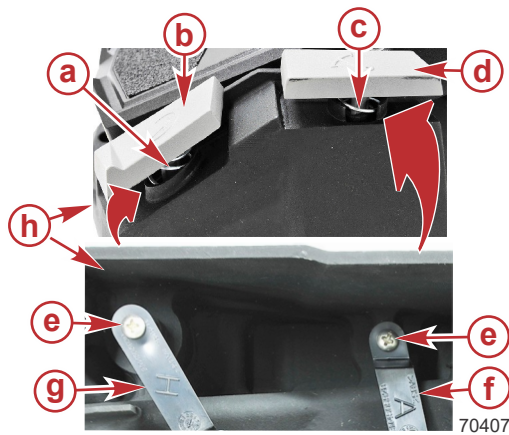
- a** - Foot pedal base
- b** - Prop-on spring
- c** - Prop-on button
- d** - Screw (3)
- e** - LED dashboard arm
- f** - LED dashboard stability pin
- g** - LED dashboard

Anchor Button Removal—Tour Pro

Remove the screw, the anchor arm, the anchor button, and the anchor button spring from the foot pedal base.

Heading Lock Button Removal—Tour Pro

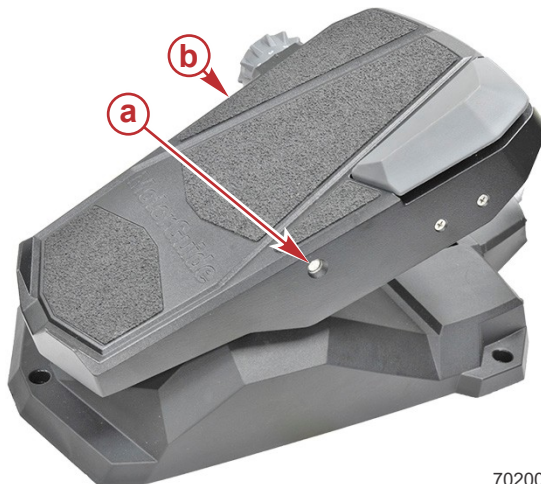
Remove the screw, the heading lock arm, the heading lock button, and the heading lock button spring from the foot pedal base.



- a** - Heading lock button spring
- b** - Heading lock button
- c** - Anchor button spring
- d** - Anchor button
- e** - Screw (2)
- f** - Anchor arm
- g** - Heading lock arm
- h** - Foot pedal base

Hinge Pin Removal—Tour/Tour Pro

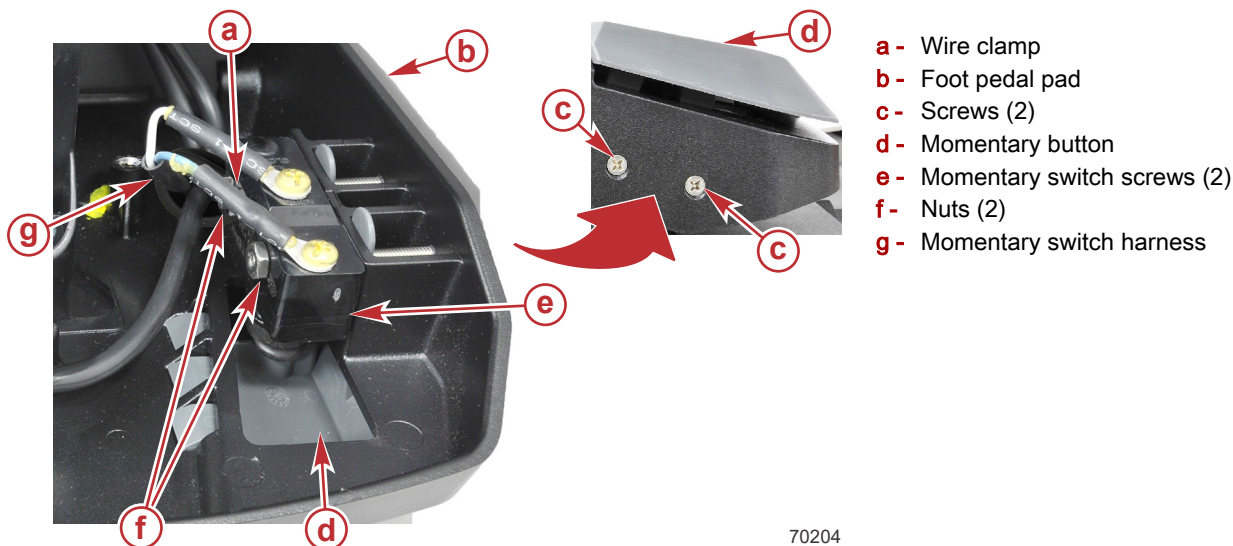
Tap out the hinge pin from the foot pedal pad.



- a** - Hinge pin
- b** - Foot pedal pad

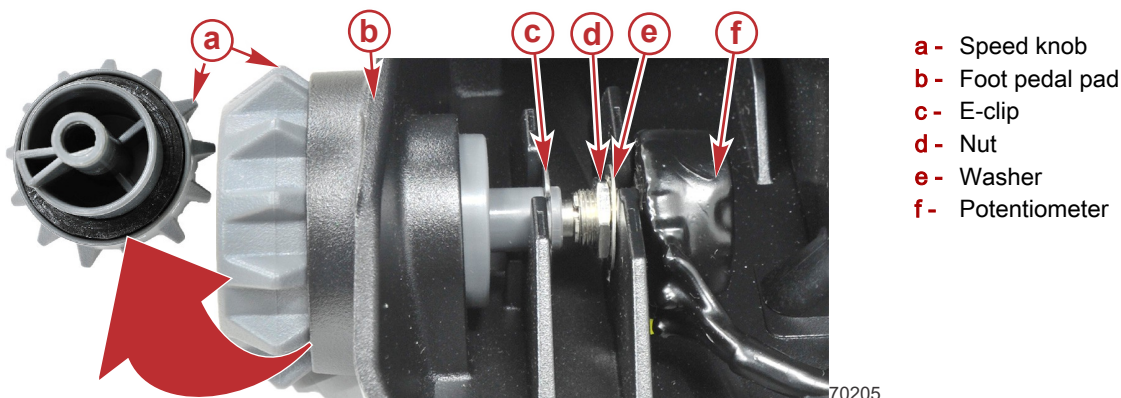
Momentary Switch Removal—Tour/Tour Pro

1. Remove the momentary switch wire harness connector from the control board. Refer to **Control Board Removal—Tour** or **Control Board Removal—Tour Pro**.
2. Remove the two screws, the momentary switch, the momentary switch wire harness, the wire clamp, and the two nuts from the foot pedal pad.
3. Remove the momentary button from the foot pedal pad.



Potentiometer Removal—Tour/Tour Pro

1. Remove the potentiometer switch wire harness connector from the control board. Refer to **Control Board Removal—Tour** or **Control Board Removal—Tour Pro**.
2. Loosen the nut and washer.
3. Remove the E-clip and the speed knob from the foot pedal pad.
4. Remove the potentiometer from the foot pedal pad.



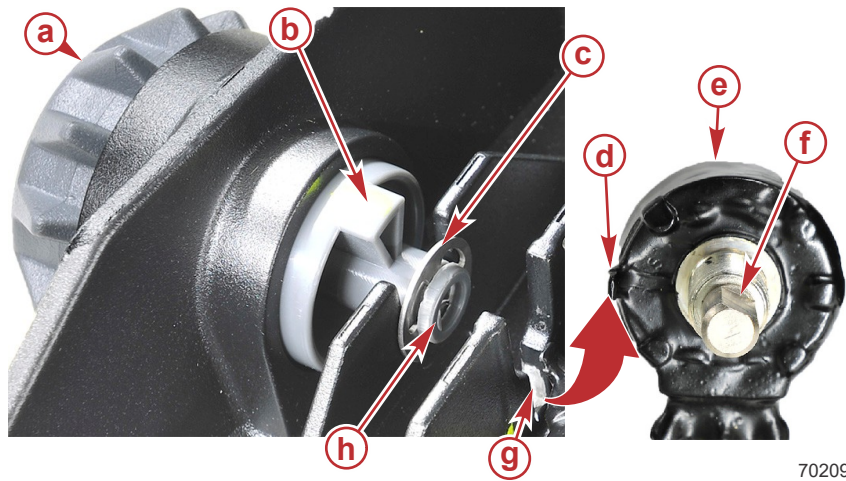
Foot Pedal Assembly

Potentiometer Installation—Tour/Tour Pro

1. Position the speed knob on the foot pedal pad with the speed knob notch in the top position.
2. Install the E-clip on the speed knob.
3. Position the potentiometer on the foot pedal pad with the potentiometer notch aligned with the foot pedal pad slot.

Foot Pedal

- Align the speed knob molded flat with the potentiometer machined flat.

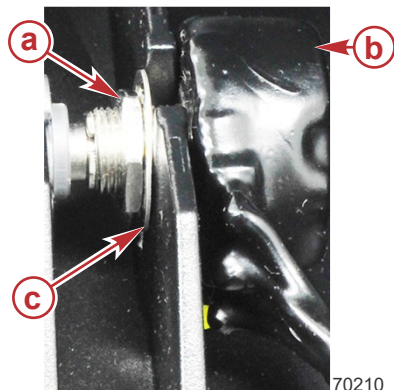


- a - Speed knob
- b - Speed knob notch
- c - E-clip
- d - Potentiometer notch
- e - Potentiometer
- f - Potentiometer machined flat
- g - Foot pedal pad slot
- h - Speed knob molded flat

70209

- Install the washer and nut on the potentiometer.
- Push the potentiometer shaft into the speed knob shaft.
- Tighten the washer and nut to the foot pedal pad.
- Tighten the nut to the potentiometer.

| Description | Nm | lb-in. | lb-ft |
|-------------|-----|--------|-------|
| Nut | 2.7 | 24 | – |



- a - Nut
- b - Potentiometer
- c - Washer

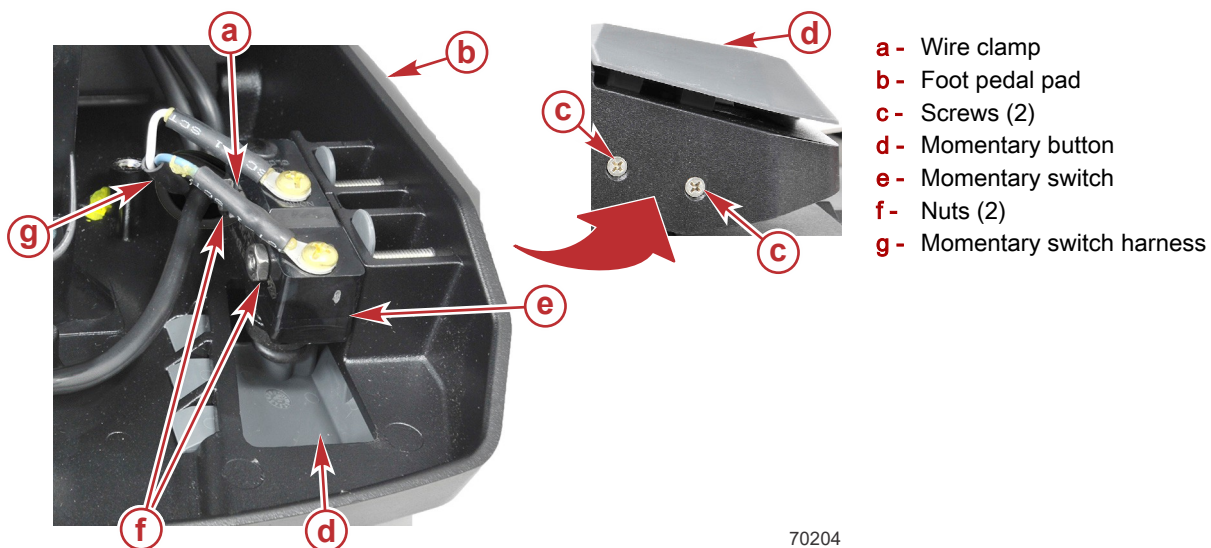
70210

- Install the potentiometer switch wire harness connector on the control board. Refer to **Control Board Installation—Tour** or **Control Board Installation—Tour Pro**.

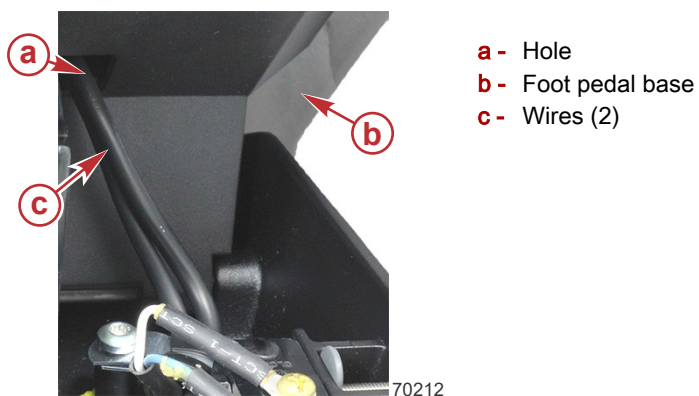
Momentary Switch Installation—Tour/Tour Pro

- Install the momentary button on the foot pedal pad.
- Install the momentary switch, the momentary switch harness, and the wire clamp on the foot pedal pad with two screws and the two nuts.
- Tighten the two screws to the proper specification.

| Description | Nm | lb-in. | lb-ft |
|-------------|----|--------|-------|
| Screws (2) | 1 | 8.9 | - |



4. Route the wires through the hole in the foot pedal base.

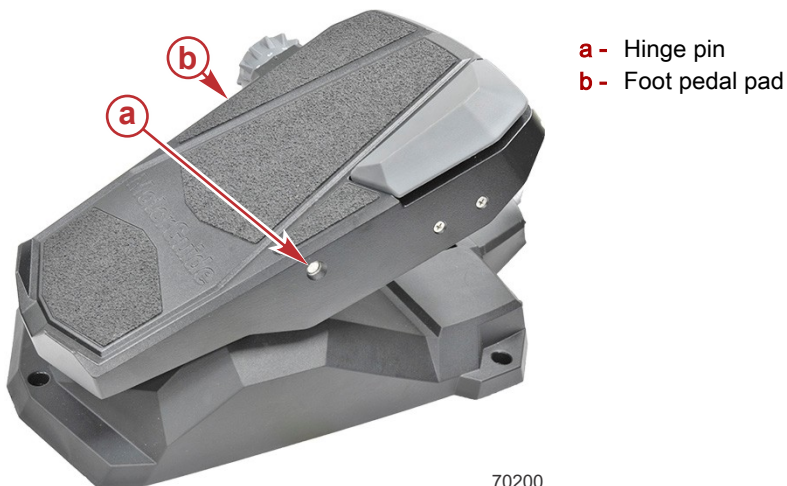


5. Install the momentary switch wire harness connector on the control board. Refer to **Control Board Installation—Tour** or **Control Board Installation—Tour Pro**.

Hinge Pin Installation—Tour/Tour Pro

Carefully drive the hinge pin into the foot pedal pad with a hammer and brass drift (if removed for service).

NOTE: Install a new hinge pin with the knurled end on the opposite side of where it was removed to provide maximum retention.

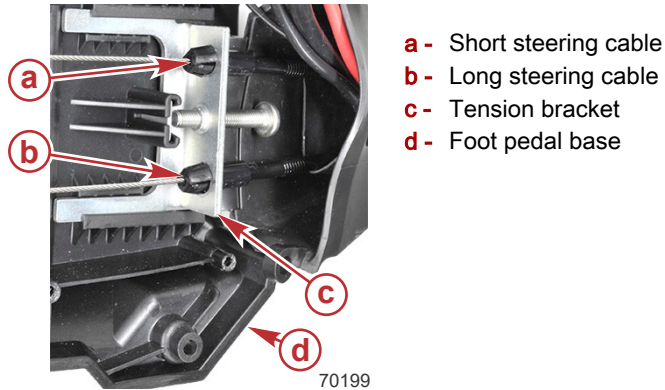


Wire and Steering Rigging Installation—Tour/Tour Pro

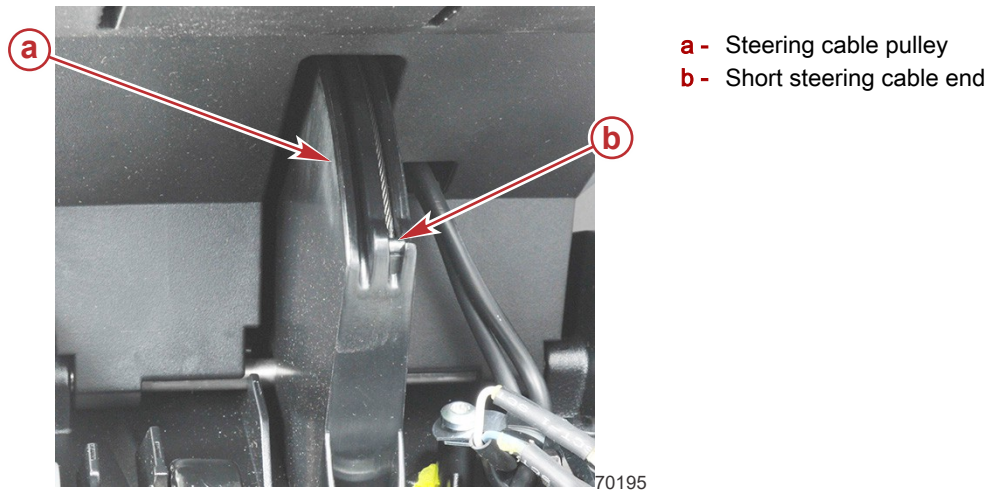
1. If the wiring or steering cables were replaced, refer to **Section 3E - Wire and Steering Cable Rigging Assembly**.
2. Position the wire and steering rigging on the foot pedal base if previously removed.

Steering Cables Installation—Tour/Tour Pro

1. Install the tension bracket on the foot pedal base.
2. Install the long and short steering cables through the tension bracket.



3. Install the short steering cable end to the large steering cable pulley.

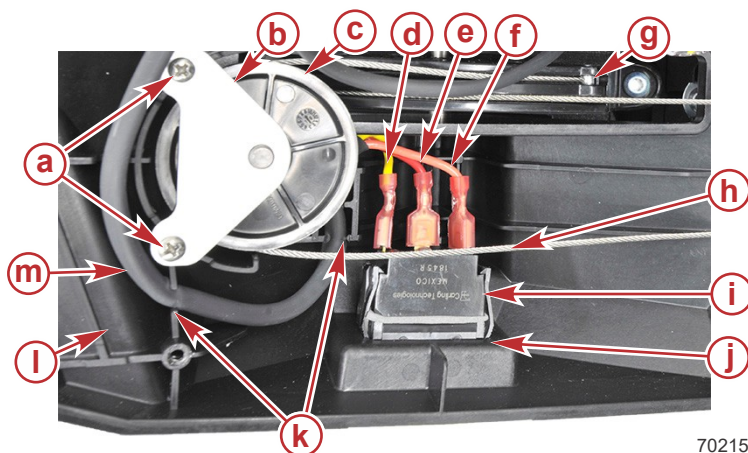


4. Install the long steering cable on the large steering cable pulley.
5. Install the long steering cable end on the small steering cable pulley.
NOTE: Be certain the steering cable stays installed on the small steering cable pulley.
6. Install the small steering cable pulley on the foot pedal base with the keeper plate and the two screws.

Power Switch Installation—Tour

1. With the power switch located on the outside of the power switch hole, install the control board orange wire on the power switch.
2. Install the red wire on the power switch.
3. Install the yellow wire on the power switch.
4. Position the yellow/red/orange wire in the notches under the steering cable and around the keeper plate.

5. Push the power switch through the foot pedal base.



Tour model shown, steering cables for Tour Pro are located in the same positions.

- a - Screws (2)
- b - Keeper plate
- c - Small steering cable pulley
- d - Yellow wire
- e - Red wire
- f - Orange wire
- g - Long steering cable end
- h - Long steering cable
- i - Power switch
- j - Power switch hole
- k - Notches
- l - Foot pedal base
- m - Yellow/red/orange wire

70215

Heading Lock Installation—Tour Pro

NOTE: The heading lock arm notches and the heading lock button notches fit together in a specific configuration.

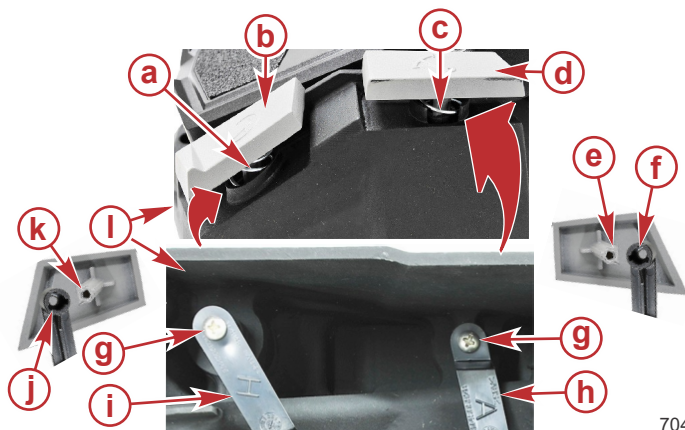
Install the heading lock spring, the heading lock button, and the heading lock arm on the foot pedal base with the screw.

Anchor Button Installation—Tour Pro

NOTE: The anchor arm notches and the anchor arm button notches fit together in a specific configuration.

1. Install the anchor spring, the anchor button, and the anchor arm on the foot pedal base with the screw.
2. Tighten the screw to the proper specification.

| Description | Nm | lb-in. | lb-ft |
|-------------|----|--------|-------|
| Screw | 1 | 9 | – |



- a - Heading lock button spring
- b - Heading lock button
- c - Anchor button spring
- d - Anchor button
- e - Anchor button notches
- f - Anchor arm notches
- g - Screw (2)
- h - Anchor arm
- i - Heading lock arm
- j - Heading lock arm notches
- k - Heading lock button notches
- l - Foot pedal base

70411

LED Dashboard Installation—Tour Pro

1. Install the LED dashboard on the foot pedal base with the two screws.
2. Tighten the two screws to the proper specification.

| Description | Nm | lb-in. | lb-ft |
|-------------|-----|--------|-------|
| Screw (2) | 0.8 | 7 | – |

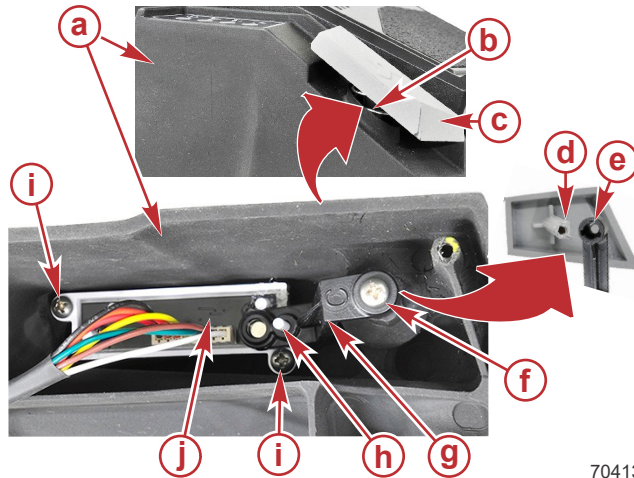
3. Position the prop-on button spring and prop-on button on the foot pedal base.
4. Position the prop-on arm on the LED dashboard stability pin.

NOTE: The prop-on arm notches and the prop-on button notches fit together in a specific configuration.

5. Install the prop-on arm on the foot pedal base with the prop-on screw.
6. Tighten the screw to the proper specification.

Foot Pedal

| Description | Nm | lb-in. | lb-ft |
|-------------|----|--------|-------|
| Screw | 1 | 9 | - |



- a** - Foot pedal base
- b** - Prop-on button spring
- c** - Prop-on button
- d** - Prop-on button notches
- e** - Prop-on arm notches
- f** - Prop-on screw
- g** - Prop-on arm
- h** - LED dashboard stability pin
- i** - Screw (2)
- j** - LED dashboard

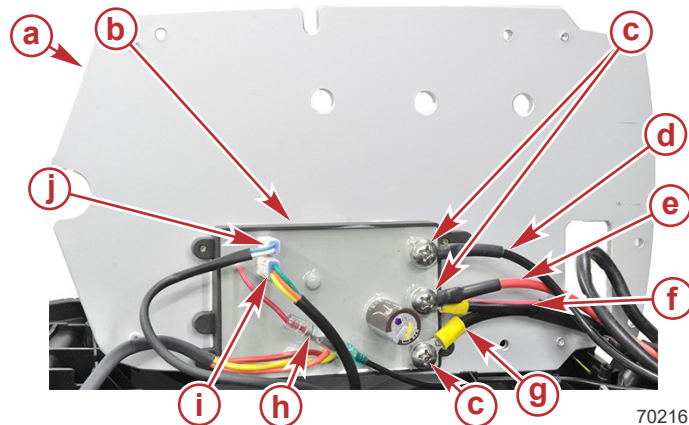
70413

Control Board Installation—Tour

1. Connect the red and black wire bullet connector.
2. Connect the potentiometer harness connector to the control board connector.
3. Connect the momentary switch harness connector to the control board connector.
4. Install the yellow capped black wire on the control board with the screw.
5. Tighten the screw to the proper specification.

| Description | Nm | lb-in. | lb-ft |
|-------------|-----|--------|-------|
| Screw | 2.7 | 24 | - |

6. Install the red wire and the red/black wire on the control board with the screw.
7. Install the black wire on the control board with the screw.
8. Position the new heat sink pad on the control board and position the control board on the baseplate.

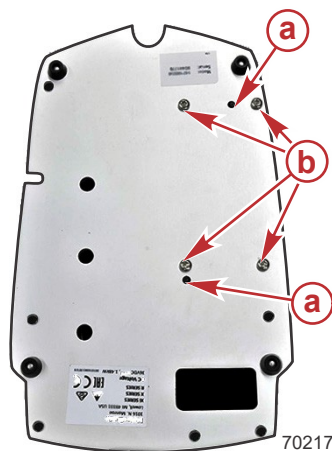


- a** - Baseplate
- b** - Heat sink pad and control board
- c** - Screw (3)
- d** - Black wire
- e** - Red wire
- f** - Red/black wire
- g** - Yellow capped black wire
- h** - Red and black wire bullet connector
- i** - Potentiometer harness connector
- j** - Momentary switch harness connector

70216

9. Make sure the control board is positioned with the two control board pins aligned to the two holes in the baseplate.
10. Install the control board on the baseplate with the four control board screws.
11. Tighten the four control board screws to the proper specification.

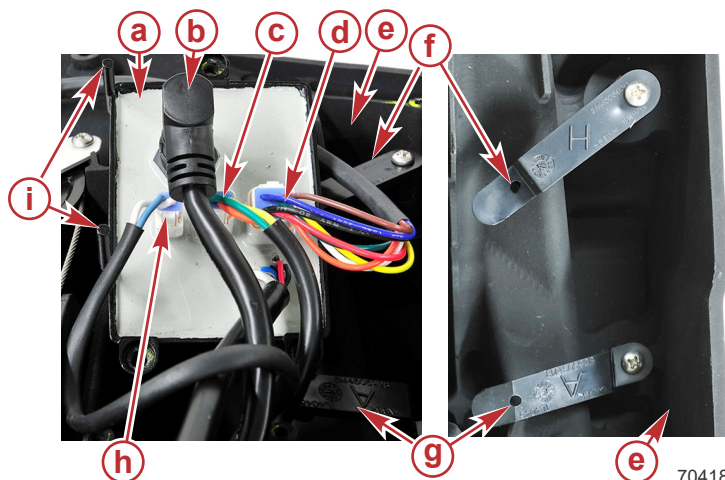
| Description | Nm | lb-in. | lb-ft |
|-------------------------|----|--------|-------|
| Control board screw (4) | 1 | 8.9 | – |



- a - Control board pins (2)
- b - Control board screws (4)

Foot Pedal Control Board Installation—Tour Pro

1. Connect the communication cable to the foot pedal control board.
2. Connect the momentary switch harness connector to the foot pedal control board.
3. Connect the potentiometer harness connector to the foot pedal control board.
4. Connect the LED board connector to the foot pedal control board.
5. Position the foot pedal control board stability pins into the heading lock arm and the anchor arm.



- a - Foot pedal control board
- b - Communication cable
- c - Potentiometer harness connector
- d - LED board connector
- e - Foot pedal base
- f - Heading lock arm
- g - Anchor arm
- h - Momentary switch harness connector
- i - Stability pins

6. Position the LED dashboard wire through the foot pedal control board slot, around the steering cable pulley and through the LED dashboard slot.

IMPORTANT: Be certain to position the wire harnesses away from the heading lock and anchor arms.

7. Install the foot pedal control board on the foot pedal base with the three control board screws.
8. Tighten the three control board screws to the proper specification.

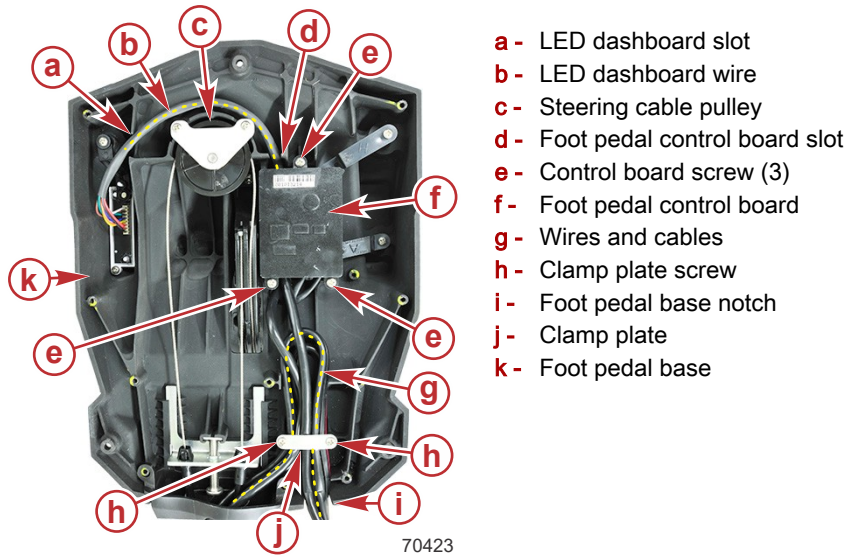
| Description | Nm | lb-in. | lb-ft |
|-------------------------|----|--------|-------|
| Control board screw (3) | 1 | 9 | – |

IMPORTANT: Do not pinch the wires and cables between the clamp plate and clamp plate screws.

9. Position the wires and cables between the tension bracket and the wire and steering cable rigging end cap screw.
10. Loop the wires and cables between the clamp plate screw holes and through the foot pedal base notch.
11. Install the clamp plate on the foot pedal base with the two clamp plate screws.
12. Tighten the two clamp plate screws to the proper specification.

Foot Pedal

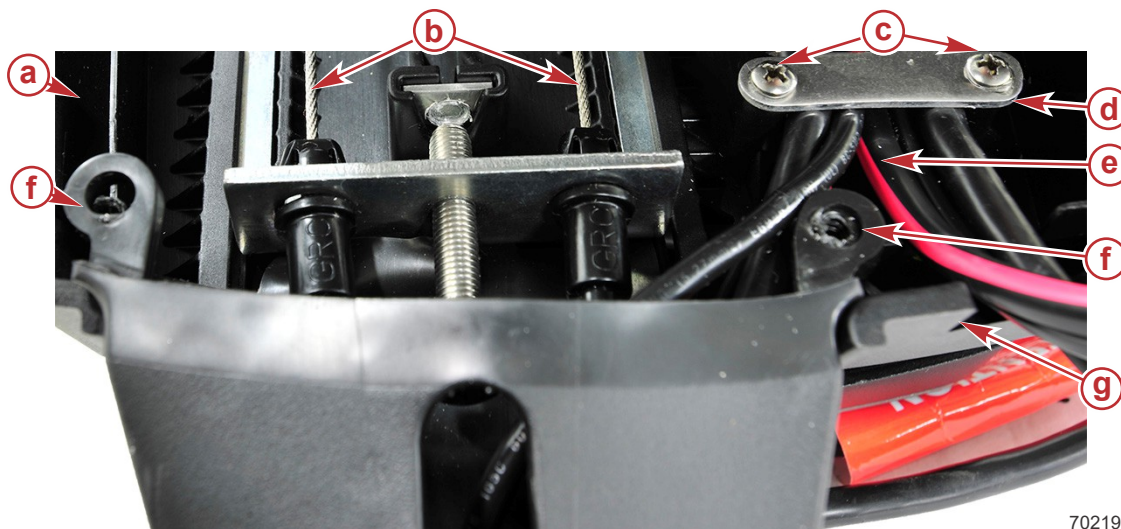
| Description | Nm | lb-in. | lb-ft |
|-----------------------|----|--------|-------|
| Clamp plate screw (2) | 1 | 9 | - |



13. Connect the NMEA cable, if previously disconnected.

Baseplate Installation—Tour

1. Position the wires away from the steering cables, under the clamp plate and in the foot pedal base slot .
IMPORTANT: Do not pinch the wires between the baseplate and the foot pedal base.
2. Install the clamp plate on the foot pedal base with the two clamp plate screws.
3. Position the wire and steering rigging foot pedal cap on the foot pedal base.



- a - Foot pedal base
 - b - Steering cables
 - c - Clamp plate screws (2)
 - d - Clamp plate
 - e - Wires
 - f - Wire and steering rigging foot pedal cap
 - g - Foot pedal base slot
4. Install the baseplate on the foot pedal base with the seven screws.
 5. Tighten the seven screws to the proper specification.

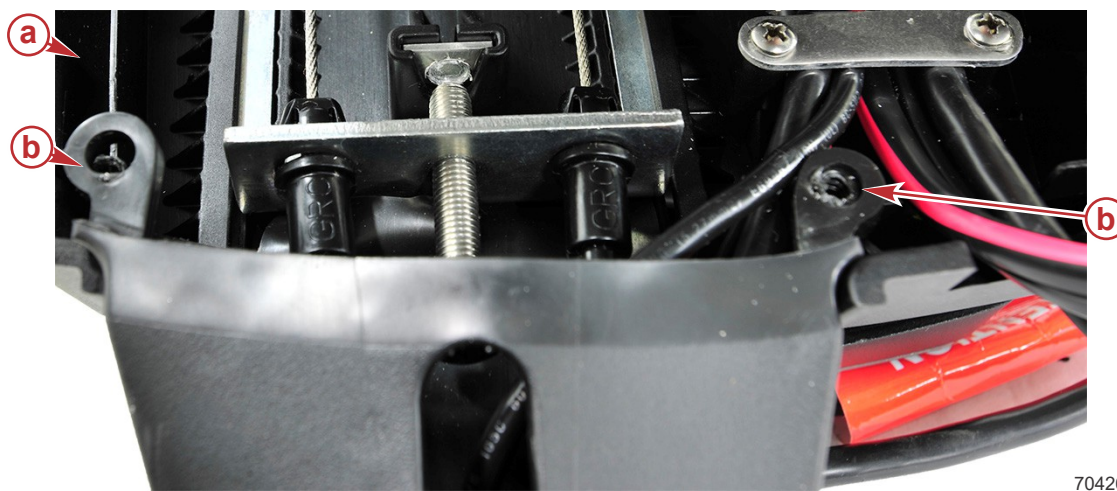
| Description | Nm | lb-in. | lb-ft |
|-------------|----|--------|-------|
| Screw (7) | 1 | 8.9 | – |



a - Screws (7)

Baseplate Installation—Tour Pro

1. Position the wire and steering cable rigging foot pedal cap on the foot pedal base.



a - Foot pedal base

b - Wire and steering cable rigging foot pedal cap

2. Install the baseplate on the foot pedal base with the ten baseplate screws.
3. Tighten the ten screws to the proper specification.

| Description | Nm | lb-in. | lb-ft |
|----------------------|----|--------|-------|
| Baseplate screw (10) | 1 | 9 | - |



- a - Baseplate
- b - Foot pedal base
- c - Baseplate screw (10)

70402

Adjusting the Steering Cable Tension

⚠ WARNING

Neglecting to inspect, maintain, or repair your trolling motor can result in product damage or serious injury or death. Do not perform maintenance or service on your trolling motor if you are not familiar with the correct service and safety procedures.

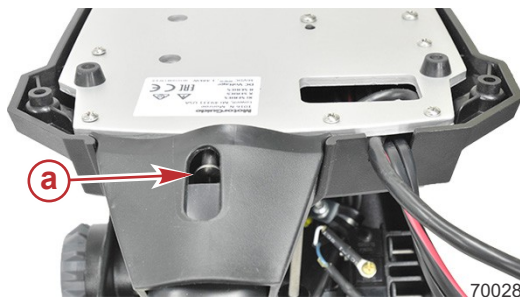
The cable tension on the trolling motor is preset at the factory. With time and use, the steering cables may stretch slightly, requiring occasional adjustment. The following procedure explains how to adjust the steering cable tension.

Use care while adjusting the steering cable tension. Improper steering cable tension, whether too loose or too tight will cause premature steering cable wear and or loss of steering control.

1. Remove the foot pedal from the boat deck if it has been secured with screws.
2. Adjust the steering cable tension by turning the steering cable tension screw clockwise to increase tension, and counterclockwise to decrease tension.
3. **Tour only**-Adjust the steering cable tension screw to the specified torque value.

| Description | Nm | lb-in. | lb-ft |
|------------------------------|-----|--------|-------|
| Steering cable tension screw | 1.7 | 15 | - |

4. **Tour Pro only**-Adjust the steering cable tension screw so that the slack in the foot pedal pad has been removed.
5. **Tour Pro only**-If the foot pedal has been disassembled and reassembled, Refer to **3B - Foot Pedal End-of-Travel Calibration and Sensor Module Calibration** for calibration after adjusting the tension screw.



- Bottom of foot pedal
- a - Steering cable tension screw

70028

6. **Tour Pro only**-Refer to **1A-Tour Pro Feel Adjustments**

Trolling Motor Disassembly and Assembly

Section 3E - Wire and Steering Rigging

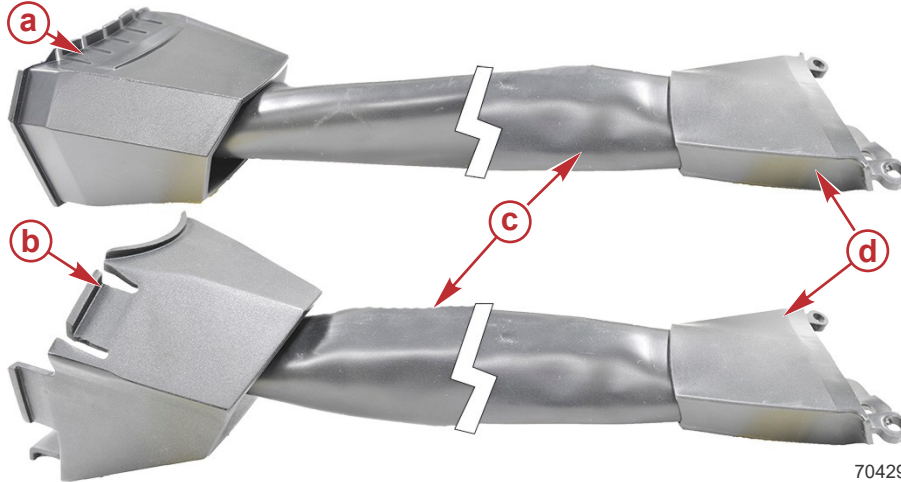
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|--|------|---|------|

**3
E**

Wire and Steering Rigging Disassembly

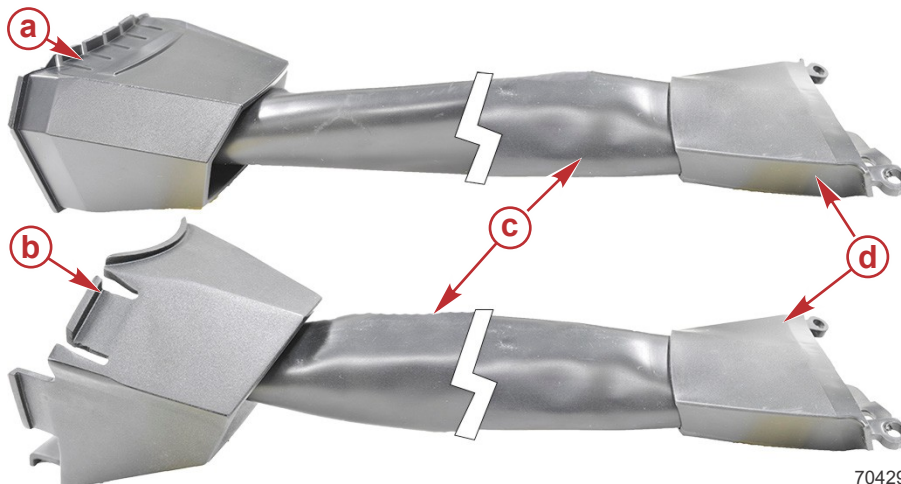
1. Disconnect the steering cables and wires from the foot pedal. Refer to **Section 3D - Foot Pedal Disassembly—Tour** or **Section 3D - Foot Pedal Disassembly—Tour Pro**.
2. Disconnect the steering cables and wires from the top housing. Refer to **Section 3D - Top Housing Disassembly—Tour** or **Section 3D - Top Housing Disassembly—Tour Pro**
3. Remove the steering cables and wires from the sheath.
4. Remove the top housing cap and foot pedal cap from the sheath.



- a - Tour top housing end cap
- b - Tour Pro top housing end cap
- c - Sheath
- d - Foot pedal end cap

Wire and Steering Rigging Assembly

1. Install the top housing cap and foot pedal cap on the sheath.
IMPORTANT: Make sure the steering cables are not twisted or braided into the wires.
2. Install the steering cables and wires into the sheath.



- a - Tour top housing end cap
- b - Tour Pro top housing end cap
- c - Sheath
- d - Foot pedal end cap

3. Connect the steering cables and wires to the top housing. Refer to **Section 3D - Top Housing Assembly—Tour** or **Section 3D - Top Housing Assembly—Tour Pro**
4. Connect the steering cables and wires to the top housing. Refer to **Section 3D - Top Housing Assembly—Tour** or **Section 3D - Top Housing Assembly—Tour Pro**

Trolling Motor Disassembly and Assembly

Section 3F - Steering System

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| Steering System Removal..... | 3F-2 | Steering System Installation..... | 3F-2 |
|------------------------------|------|-----------------------------------|------|

**3
F**

Steering System Removal

1. Place the stowed trolling motor mount on a flat surface.



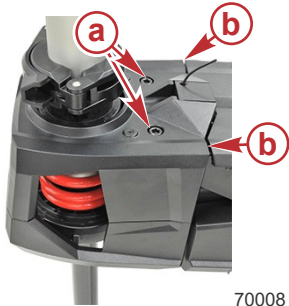
70020

2. Deploy the trolling motor.



70022

3. Remove the two screws and the trolling motor 360 breakaway housing from the mount.



70008

- a - Screws (2)
- b - Trolling motor 360 breakaway housing

Steering System Installation

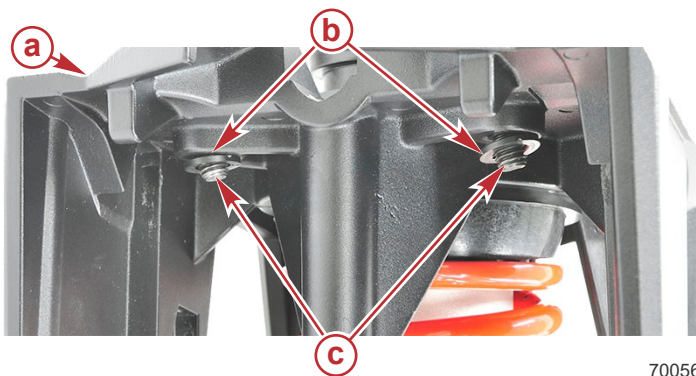
1. Place the mount in the deployed position.



70055

2. Rest the mount on a level elevated surface such as a workbench.
3. Install the Allen screws on the steering system assembly.

4. Push the plastic retaining washers on the Allen screws.

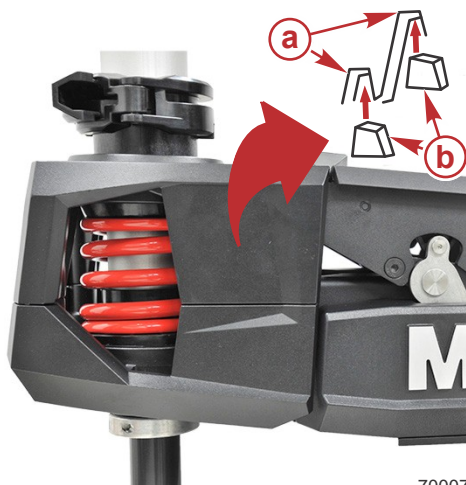


- a - Steering assembly
- b - Plastic retaining washers
- c - Allen screws

70056

IMPORTANT: Be careful not to pinch the stow/deploy handle and stow/unstow cable between the mounting bracket and the steering system.

5. Lower the steering assembly onto the mount vertically from above while aligning the keyways and the alignment keys.



- a - Keyway
- b - Alignment keyway

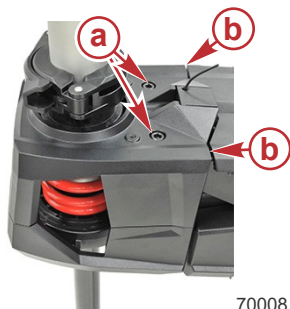
70007

IMPORTANT: Be certain the top of the 360 breakaway housing is aligned with the top of the mount.

NOTE: The first Allen screw may come loose while tightening the second Allen screw.

6. Tighten one of the two Allen screws to the specified torque. Then tighten the second Allen screw to the specified torque. When the second Allen screw is tightened, verify that the first Allen screw is still tightened to the specified torque.
7. Tighten the two Allen screws to the specified torque.

| Description | Nm | lb-in. | lb-ft |
|------------------|------|--------|-------|
| Allen screws (2) | 16.3 | 144 | - |



- a - Allen screws
- b - 360 breakaway housing aligned with the top of the mount

70008

Notes:

Trolling Motor Disassembly and Assembly

Section 3G - Lower Unit

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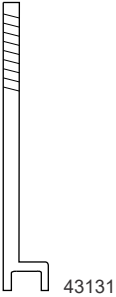
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**3
G**

Lubricants, Sealants, Adhesives

| Description | Where Used | Part No. |
|--------------|----------------|----------------|
| Loctite 9460 | Column threads | Obtain Locally |

Special Tools

| Brush Spring Compression Tool | NA |
|--|---|
|  <p>43131</p> | <p>Holds the motor brush in the brush housing when removing and installing the armature</p> |

Remove the Lower Unit from the Column

IMPORTANT: Do not use a pipe wrench to remove the lower unit from the column. A pipe wrench may allow corrosion to occur, or the friction collar and depth collar may fail. Use a strap wrench.

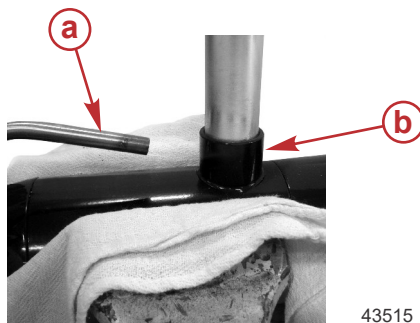
A video is available to guide in the removal of the lower unit from the column. Refer to [MotorGuide - Tour Pro Lower Unit + Column Removal](#).

1. Disassemble the top housing. Refer to **Section 3B - Top Housing Disassembly—Tour** or **Section 3B - Top Housing Disassembly—Tour Pro**.
2. Clamp the lower unit into a padded vice.
3. Secure a strap wrench to the column approximately 8 cm (3 in.) from the column collar.

⚠ CAUTION

Heating the motor column can melt the insulation of the wires inside the column. When removing the lower unit from the column, apply heat only to the column collar.

4. Use a heating torch to apply heat only to the column collar to loosen the adhesive.



- a - Heating torch
- b - Column collar

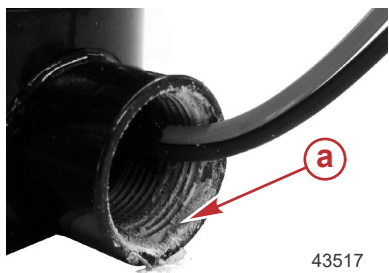
5. Use a strap wrench to rotate the column counterclockwise to loosen the column from the lower unit. When the column is loose, turn off the heating torch.
6. Unscrew the column from the lower unit.

Assemble the Lower Unit to the Column

NOTE: The column collar thread specification is 1.250-12 UNC-2B.

1. Ensure that the column collar and threads on the lower unit are clean. Remove the old thread adhesive using a wire bristle brush.

IMPORTANT: Failure to thoroughly clean the column collar and threads may cause cross threading when assembling the lower unit to the column.



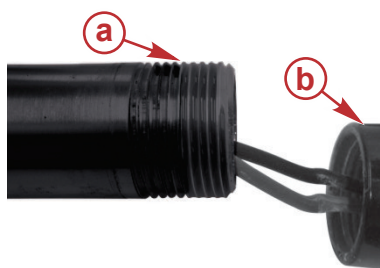
a - Excess thread adhesive

43517

- Slide the column over the motor lead wires.

IMPORTANT: The epoxy and components should be at room temperature 23 °C (73 °F) during application.

- Rotate the column while applying Loctite 9460 to fully coat the threads.



a - Loctite 9460 on column threads

b - Lower unit collar

76213

| Description | Where Used | Part No. |
|--------------|----------------|----------------|
| Loctite 9460 | Column threads | Obtain Locally |

- Insert the column into the collar of the lower unit and turn the column to start the threads.
- Using a column driver or strap wrench screw the column into the lower unit and tighten to the specified torque.

| Description | Nm | lb-in. | lb-ft |
|-------------------------------|------|--------|-------|
| Assemble column to lower unit | 67.8 | - | 50 |

- Wipe off the excess Loctite 9460 from the lower unit and column.

Installing a Pinion gear To a New Column

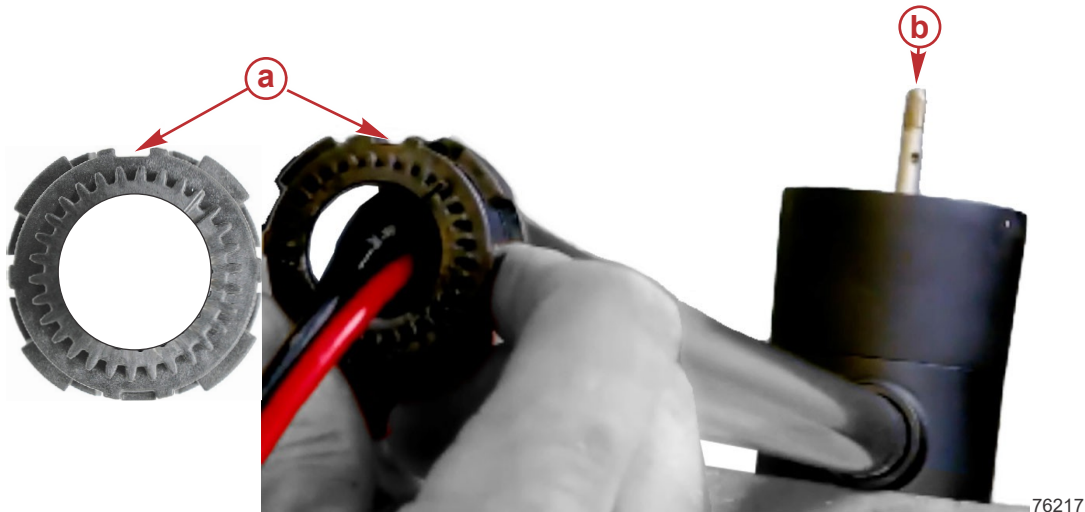
Additional guidance for this procedure is available. Refer to [MotorGuide - Tour Pro Lower Unit Assembly](#).

- Slide the pinion gear over the lower unit wiring and position it at the top of the new inner column.

IMPORTANT: The pinion gear outer notch must be aligned with the lower unit propeller shaft.

Lower Unit

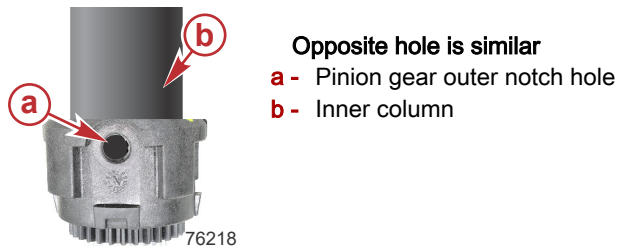
2. Align the pinion gear outer notch with the propeller shaft.



- a - Pinion gear outer notch
- b - Propeller shaft

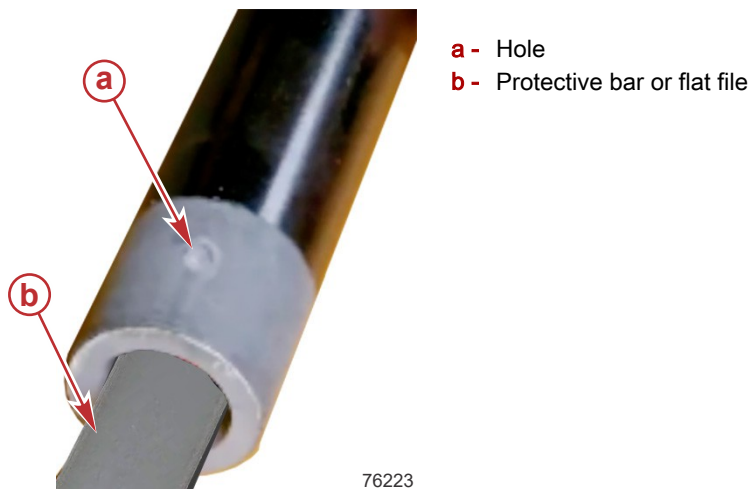
IMPORTANT: Do not drill through the inner column.

3. Using a drill and a 1/4" drill bit, mark the pinion gear outer notch hole location on the inner column.



- Opposite hole is similar
- a - Pinion gear outer notch hole
 - b - Inner column

4. Remove the pinion gear from the inner column.
5. Insert a flat file or protective bar part way into the top of the column to prevent marring of the lower unit wire during the drilling process.
6. Using the drill and 1/4" drill bit, drill the pinion gear outer notch hole in the inner column.
7. Remove the protective bar or flat file from the top of the column.



- a - Hole
- b - Protective bar or flat file

8. Install the pinion gear on the top of the column.
9. Align the pinion gear outer notch hole to the inner column hole.
10. Locate the hole on the opposite side of the pinion gear outer notch hole in the pinion gear.
11. Repeat this procedure to drill the hole on the opposite side of the pinion gear outer notch hole in the inner column.

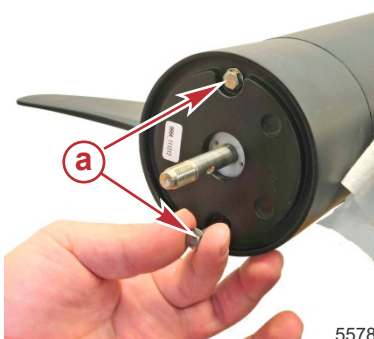
12. Install the outer column on the inner column Refer to **Section 3C - Outer Column Installation**.
13. Strip the red and black lower unit leads.
14. Install the provided lower unit crimp connectors on the red and black lower unit leads.
15. Install the top housing assembly on the column. Refer to **Section 3B - Top Housing Base Installation**.
16. Install the transmission on the top housing assembly. Refer to **Section 3B - Transmission Installation—Tour Pro**.
17. Install the steering system on the top housing assembly. Refer to **Section 3B - Steering Cables Connection—Tour Pro**.
18. Install provided lower unit power bracket into the provided crimp connectors.
19. Complete GPS/Control Board installation. Refer to **Section 3B - GPS/Control Board Installation**.

Lower Unit Disassembly

NOTE: There are two methods for removing the lower unit from the column. Refer to **Wire Pull Method** to remove the lower unit and wires from the column. Refer to **Nonwire Pull Method** if the wiring harness does not need to be removed.

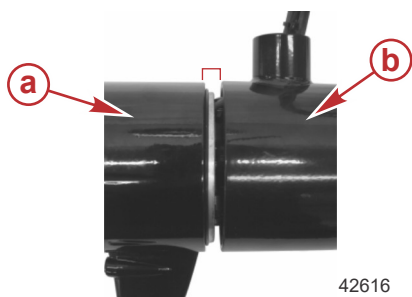
Wire Pull Method

1. Disassemble the top housing. Refer to **Section 3B - Top Housing Disassembly—Tour** or **Section 3B - Top Housing Disassembly—Tour Pro**.
2. Loosen and remove both through bolts. Retain the washers and seals.



a - Through bolts

3. Carefully pull the commutator cap away from the lower unit housing assembly approximately 1.27 cm (0.50 in.).

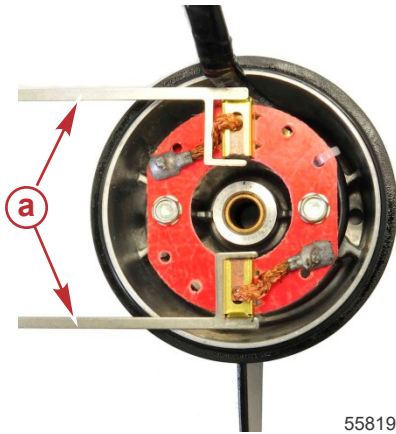


a - Commutator cap
b - Lower unit housing assembly

4. Insert one brush spring compression tool on each brush housing to hold the brushes firmly in place. Pull the commutator cap away from the lower unit.

Lower Unit

IMPORTANT: The brushes must be held back when removing the armature or serious damage may occur to the brushes and armature shaft.



a - Brush spring compression tools

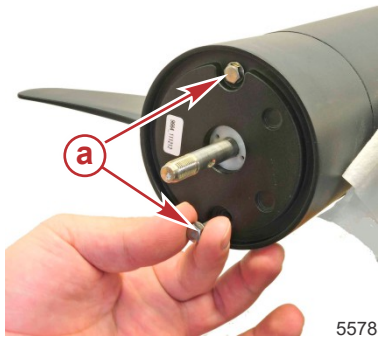
| | |
|-------------------------------|----|
| Brush Spring Compression Tool | NA |
|-------------------------------|----|

5. Pull the armature straight out from the lower unit housing assembly. If necessary, insert a metal rod into the propeller pin hole on the armature shaft to aid in removing the armature from the lower unit housing assembly.

Non-Wire Pull Method

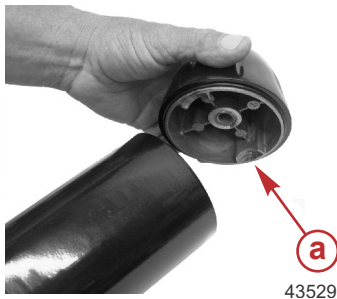
NOTE: The motor lead wires and cable assembly wires yield little slack between the top housing and the commutator cap. To fully remove the commutator cap without removing the wiring harness, it is necessary to remove all of the cable ties in the top housing. To disassemble the top housing to access the cable ties, refer to **Section 3B - Top Housing Disassembly—Tour** or **Section 3B - Top Housing Disassembly—Tour Pro**.

1. Loosen and remove both through bolts. Retain the washers and seals.



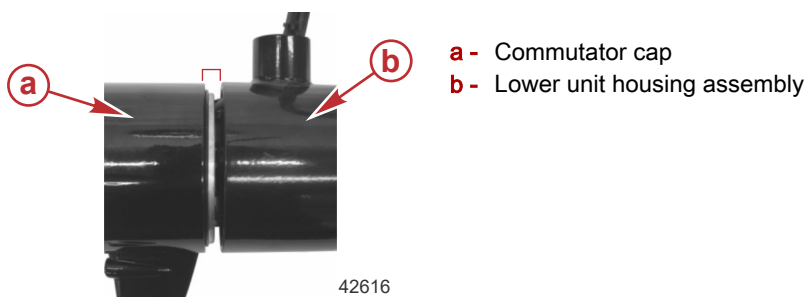
a - Through bolts

2. Remove the nose cone.

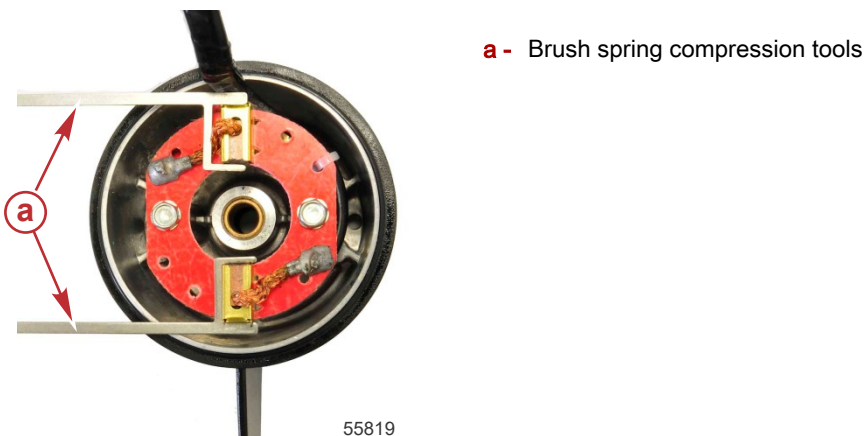


a - Nose cone

- Carefully pull the commutator cap away from the lower unit housing assembly approximately 1.27 cm (0.50 in.).

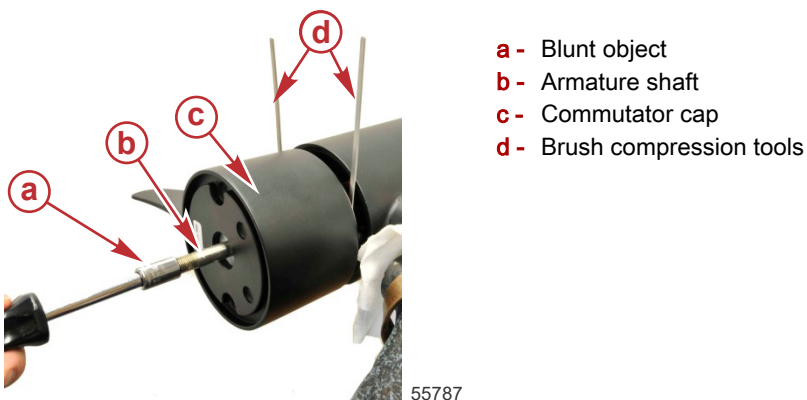


- Insert one brush spring compression tool on each brush housing to hold the brushes firmly in place.
IMPORTANT: The brushes must be held back when removing the armature or serious damage may occur to the brushes and armature shaft.

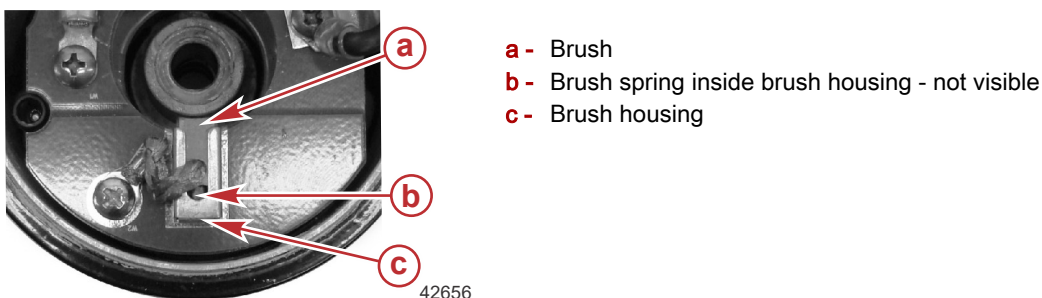


| | |
|-------------------------------|----|
| Brush Spring Compression Tool | NA |
|-------------------------------|----|

- Push against the armature shaft with a blunt object while continuing to hold the commutator cap to maintain the 1.27 cm (0.50 in.) gap. Continue pushing on the armature shaft until the commutator cap can be removed by hand.



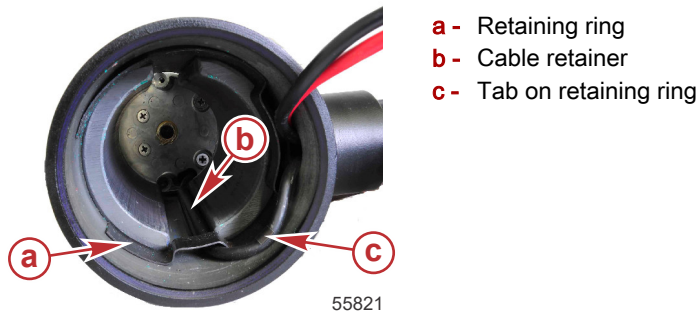
- Remove the brush compression tools to release the brushes.
- Remove the brushes and brush springs from the brush housings.



HD+ Universal Sonar Nose Cone Subassembly

Sonar Cable Removal

1. Remove the armature from the magnet housing.
2. Disconnect the sonar cable connector in the top housing. Refer to **Section 3B - Top Housing Disassembly—Tour** or **Section 3B - Top Housing Disassembly—Tour Pro**.
3. Remove the lower unit power wires from the column. For instructions on the wire pull method, refer to **Lower Unit Disassembly**.
4. After removing the commutator cap and armature from the magnet housing, remove the sonar cable from the cable retainer. Use a screwdriver to remove the retaining ring. Use care not to damage the sonar cable.

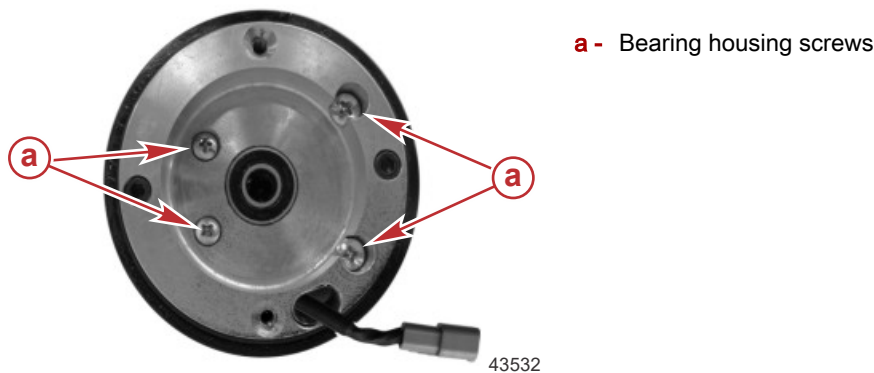


Bearing Housing and Nose Cone Removal

1. After removing the sonar cable, the nose cone and bearing housing will detach from the magnet housing.



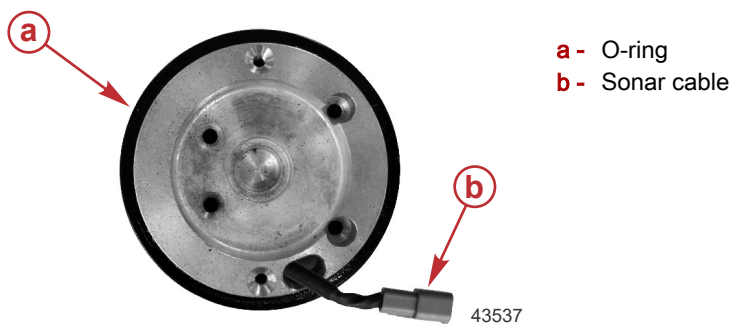
2. Remove the four screws from the bearing housing. Remove the bearing housing from the nose cone. Inspect the nose cone and bearing for damage.



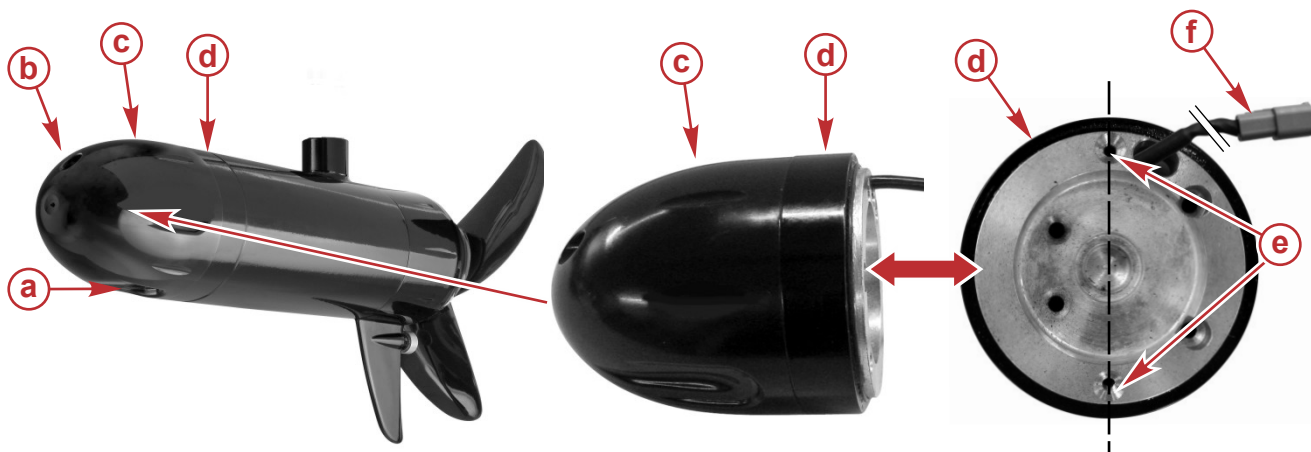
Nose Cone and Bearing Housing Installation

1. Install a new O-ring onto the nose cone.

- Insert the sonar cable through the bearing housing hole as shown.

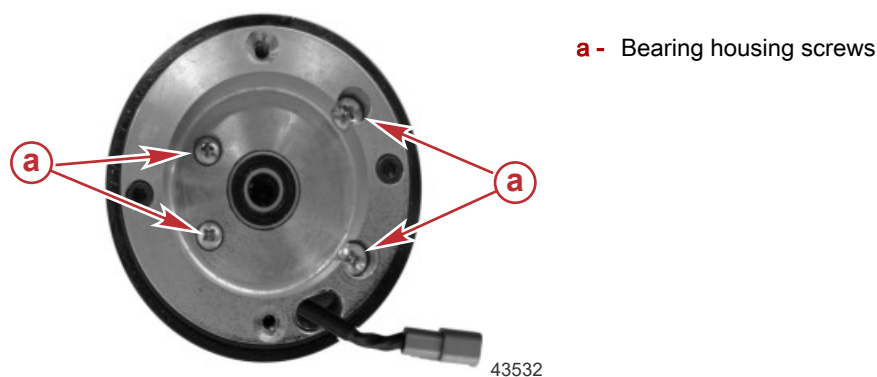


- Align the nose cone to the bearing housing. Ensure the flat surface of the nose cone faces down and that the temperature sensor faces up. Ensure that the bearing housing is aligned to the nose cone as shown.



- a** - Flat surface of the nose cone
- b** - Temperature sensor
- c** - Nose cone
- d** - Bearing housing
- e** - Through bolt holes
- f** - Sonar cable

- Install the four bearing housing screws to secure the bearing housing to the nose cone. Tighten the screws to the specified torque.



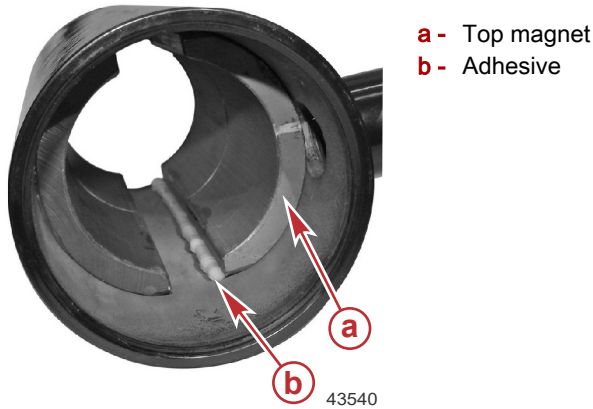
| Description | Nm | lb-in. | lb-ft |
|------------------------|-----|--------|-------|
| Bearing housing screws | 3.1 | 27.5 | - |

Sonar Cable Installation

IMPORTANT: If the sonar cable retainer is already installed in the magnet housing, go to step 3.

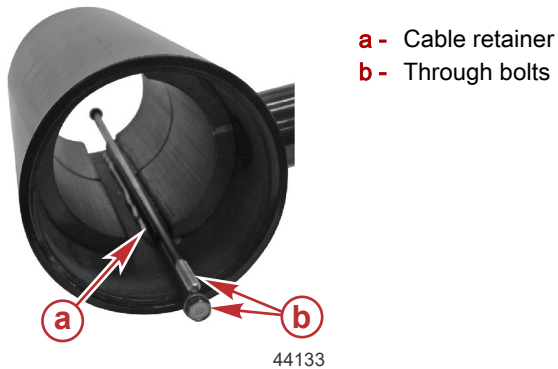
Lower Unit

1. Remove the old cable retainer and acrylic adhesive, if applicable.
2. Using the specified acrylic adhesive, apply a thin line of adhesive on the right side of the top magnet as shown.



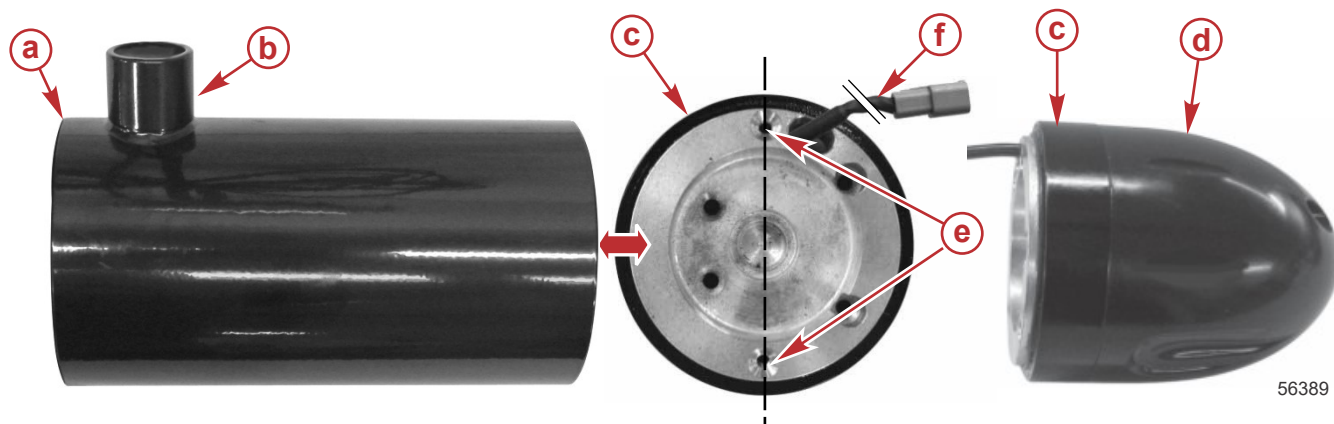
| Description | Where Used | Part No. |
|-------------|----------------|----------------|
| 3M DP-805 | Magnet housing | Obtain Locally |

3. Take two of the lower unit through bolts and place them inside the cable retainer.
NOTE: The through bolts will help position the cable retainer on top of the acrylic adhesive and prevent the plastic edges from melting together.
4. Place the cable retainer with the through bolts on top of the acrylic adhesive.
5. Press down against the installed cable retainer/through bolts and hold for ten seconds.
6. Once the acrylic adhesive has cooled, remove the through bolts from the cable retainer.
7. Allow to cure a minimum of five minutes.



8. Align the nose cone and bearing housing to the magnet housing.
IMPORTANT: Ensure that the sonar cable hole of the bearing housing is positioned as shown. The through bolt holes must be positioned, as shown, to assemble the lower unit securely.

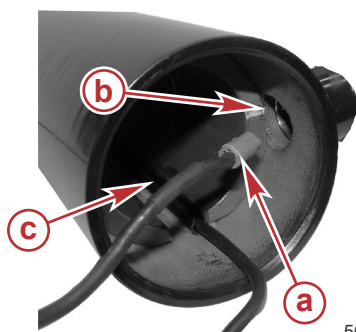
IMPORTANT: Tuck some of the sonar cable back into the nose cone to allow slack for future service.



56389

- a** - Magnet housing
- b** - Column collar
- c** - Bearing housing
- d** - Nose cone
- e** - Through bolt holes
- f** - Sonar cable

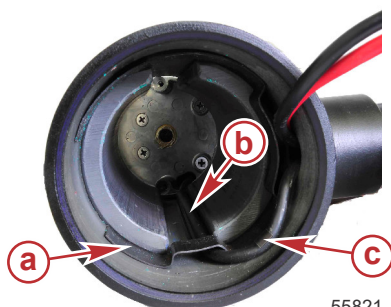
9. Route the sonar cable through the cable retainer.
10. Ensure that the nose cone and bearing housing are flush against the magnet housing and that the sonar cable is pulled tight.
11. Insert the sonar cable through the column.



56390

- a** - Sonar cable
- b** - Column
- c** - Cable retainer

12. Install the retaining ring into the magnet housing.
13. Secure the sonar cable with the tab on the retaining ring as shown.



55821

- a** - Retaining ring
- b** - Cable retainer
- c** - Tab on retaining ring

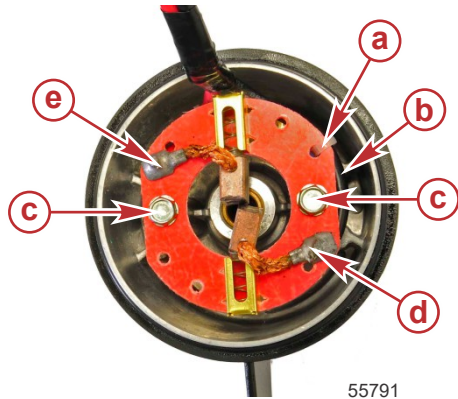
14. Insert the lower unit power wires through the column. Refer to **Lower Unit Assembly** for remaining lower unit assembly instructions.

Commutator Cap Subassembly

Brush Board Assembly Removal

IMPORTANT: If the wiring harness that runs through the column requires replacement, remove the retainer ring (if present) holding the wiring harness and pull the wires out through the lower unit.

1. Remove the commutator cap from the lower unit. Refer to **Lower Unit Disassembly**.
2. Remove the two screws from the brush board assembly. Remove the cable tie.
3. Unsolder the negative (-) and positive (+) shunt wire solder connections to remove the motor leads from the brush board.

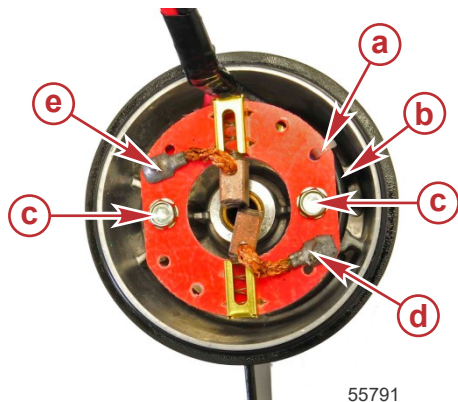


- a - Cable tie
- b - Negative (-) motor lead
- c - Brush board screw
- d - Negative (-) shunt wire solder connection
- e - Positive (+) shunt wire solder connection

4. If the brush board is damaged, replace the brush board.

Brush Board Assembly Installation

1. Solder the positive (+) and negative (-) motor leads to the brush board terminals. Solder the shunt wires to the brush board terminals.
2. Route the positive (+) and negative (-) motor leads as shown. Secure the negative motor lead to the brush board with a cable tie as shown.
3. Install the brush springs onto the brushes. Install the brushes and springs into the brush holders
4. Secure the brush board assembly to the commutator cap housing with the brush board assembly screws. Tighten the screws to the specified torque.



- a - Cable tie
- b - Negative (-) motor lead
- c - Brush board screw
- d - Negative (-) shunt wire solder connection
- e - Positive (+) shunt wire solder connection

5. Route the motor leads to the top of the commutator cap (away from the skeg) and secure them together with electrical tape where they exit the commutator cap. Do not leave any slack in the wires.

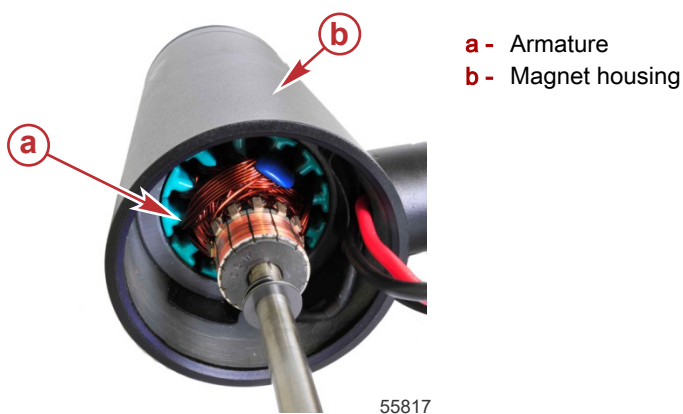
Lower Unit Assembly

Armature and Brush Board Assembly

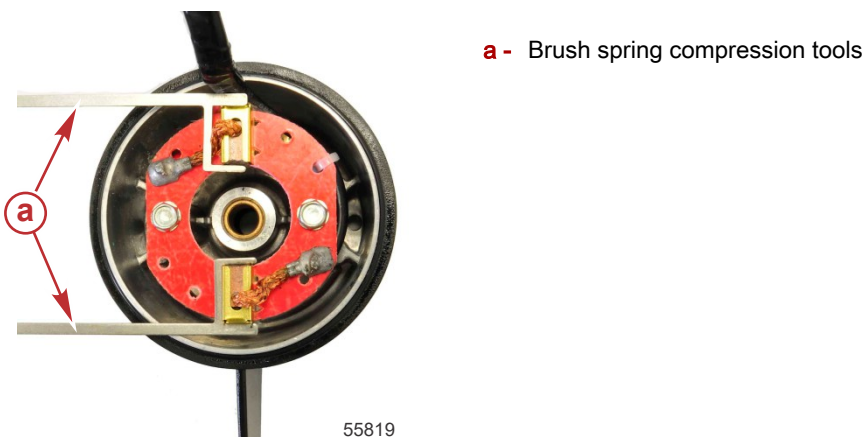
1. If the wiring harness was removed from the column, insert the wiring harness up through the column before installing the armature.

| Description | Nm | lb-in. | lb-ft |
|----------------------------|-----|--------|-------|
| Brush board assembly screw | 3.9 | 35 | - |

2. Insert the armature into the magnet housing.

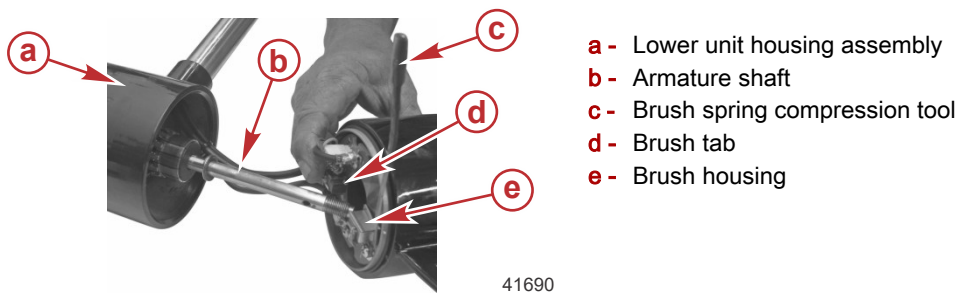


3. Retain the brushes in their housings with two brush spring compression tools.



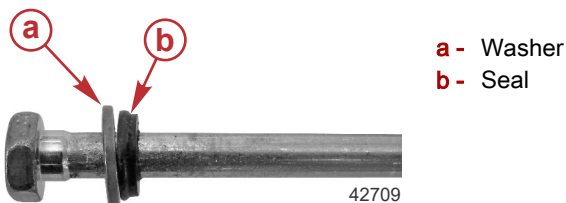
| | |
|-------------------------------|----|
| Brush Spring Compression Tool | NA |
|-------------------------------|----|

4. While retaining the brushes in their housings, slide the armature shaft into the center hole of the brush board assembly.
IMPORTANT: The brushes must be retained in their housings to avoid damage to the brushes and armature shaft.



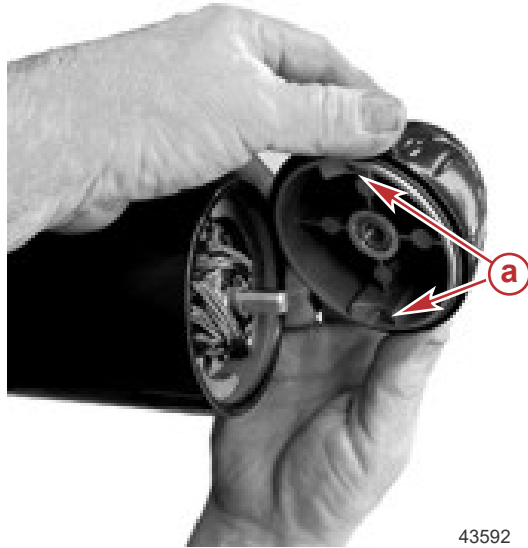
Assemble Commutator Cap to Lower Unit Housing

1. Replace the seals and washers on the through bolts.



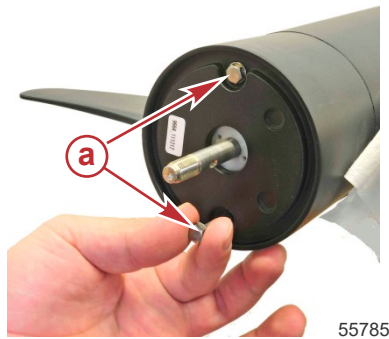
Lower Unit

- Before assembly, ensure that the nose cone is positioned correctly and the skeg is parallel to the column. For sonar models, refer to **HD+ Universal Sonar Nose Cone Subassembly**.



a - Through bolt holes

- Install the through bolts. Tighten the through bolts alternately to the specified torque.



a - Through bolts

| Description | Nm | lb-in. | lb-ft |
|--------------------------|-----|--------|-------|
| Lower unit through bolts | 5.1 | 45 | - |

Propeller Replacement

⚠ WARNING

Performing service or maintenance without first disconnecting the battery can cause product damage, personal injury, or death due to fire, explosion, electrical shock, or unexpected motor starting. Always disconnect the battery cables from the battery before maintaining, servicing, installing, or removing motor components.

Removing the Propeller

- Disconnect the power cables from the battery.
- While holding the propeller blade with one gloved hand, use a 9/16 in. wrench or a ratchet and a 9/16 in. socket to remove the propeller nut. Remove the propeller nut and washer (or anode, for saltwater models).

IMPORTANT: Remove the propeller nut with a wrench or a ratchet and socket. Using another tool may damage the propeller nut or shaft. If the propeller cannot be removed easily, use a rubber mallet to lightly tap the back side of the opposite blade. If the propeller cannot be removed, have the propeller removed by an authorized dealer.

NOTE: If the propeller pin is bent, replace the propeller pin.



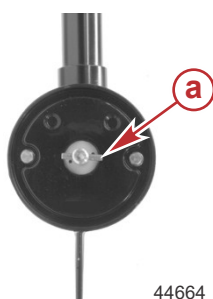
71328



71330

Installing the Propeller

1. Rotate the motor shaft to insert the propeller pin horizontally.



a - Propeller pin

44664

Lower Unit

2. Install the propeller onto the motor shaft by engaging the propeller onto the propeller pin.



71330

3. Install the washer (or anode, for saltwater models) onto the propeller shaft, then install the propeller nut. Use a wrench or a socket and ratchet to tighten the propeller nut until it is snug, then tighten the nut another 1/4 turn.

IMPORTANT: Do not overtighten the propeller nut, or damage to the propeller or propeller pin may occur.



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Trolling Motor Disassembly and Assembly

Section 3H - Mount

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| Gas Spring Removal..... | 3H-2 | Rear Lockslide Spring Installation..... | 3H-6 |
| Deck Plate Removal..... | 3H-3 | Front Lockslide Hooks Installation..... | 3H-6 |
| Stow/Unstow Cable Removal..... | 3H-3 | Lockslide Installation..... | 3H-7 |
| Lockslide Removal..... | 3H-4 | Stow/Unstow Cable Installation..... | 3H-8 |
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**3
H**

Lubricants, Sealants, Adhesives

| Description | Where Used | Part No. |
|--------------------------|------------|-----------|
| Loctite 271 Threadlocker | Screw | 92-809819 |
| Loctite 242 Threadlocker | Screws | 92-809821 |

Mount Disassembly

Gas Spring Removal

1. Remove the steering system from the mount. Refer to **Section 3 F–Steering System Removal**.

⚠ WARNING

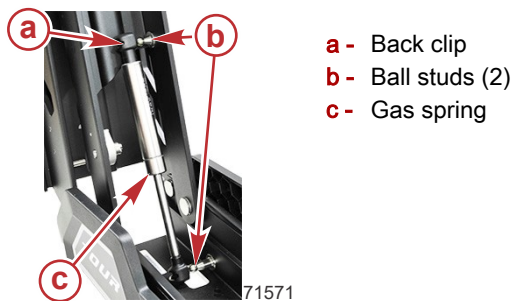
Avoid personal injury by applying pressure to the top channel when releasing the lockslide pins. Failure to apply pressure on top of the top channel when pulling the rope to release the lockslide pins may cause the top channel to spring upward.

2. Apply steady downward pressure to the upper channel while pulling the stow/deploy handle to the rear and pressing the two safety blockers.



- a - Safety blockers (2)
- b - Stow/deploy handle
- c - Top channel

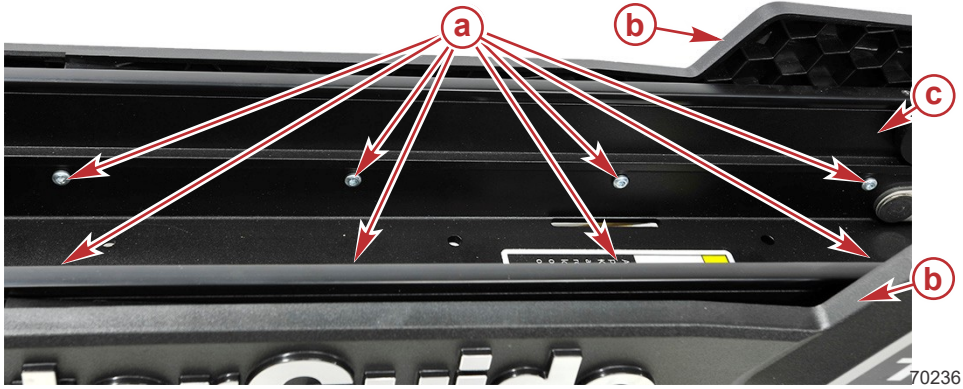
3. Slowly allow the top channel to swing upward into the neutral position.
4. Position the top channel in the neutral position.
5. Squeeze the black clip on the back with a pair of pliers, then pry the interior portion of the gas spring away from the mount to disconnect from the ball studs.
6. Remove the gas spring from the ball studs.



- a - Back clip
- b - Ball studs (2)
- c - Gas spring

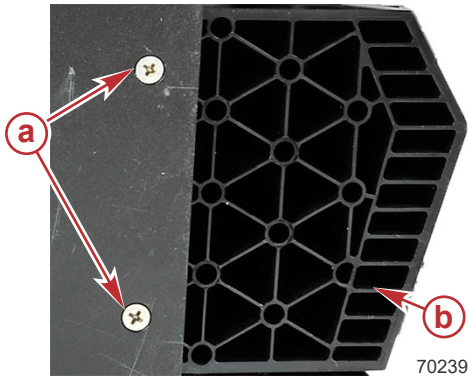
Deck Plate Removal

1. Remove the eight screws and the two decket plates from the lower channel.



- a - Screws (8)
- b - Decket plates (2)
- c - Lower channel

2. Remove the two screws and the front decket from the lower channel.



- a - Screws (2)
- b - Front decket

Stow/Unstow Cable Removal

1. Remove the two screws, stow/unstow handle cap, and stow/unstow cable from the stow/unstow handle.

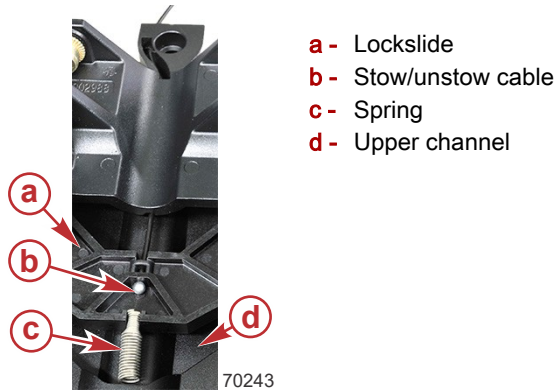


- a - Stow/unstow handle
- b - Stow/unstow cable
- c - Stow/unstow handle cap
- d - Screws (2)

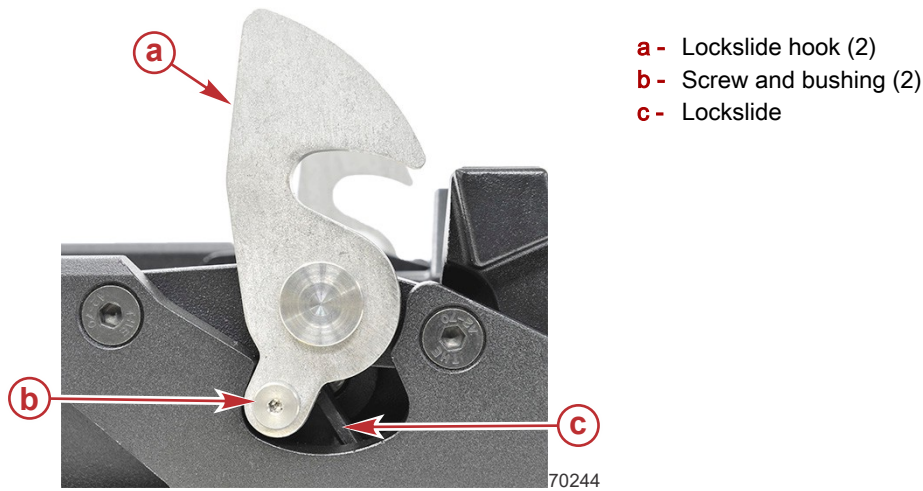
2. Remove the stow/unstow cable from the lockside.

Lockslide Removal

1. Remove the spring from the lockslide and the upper channel.

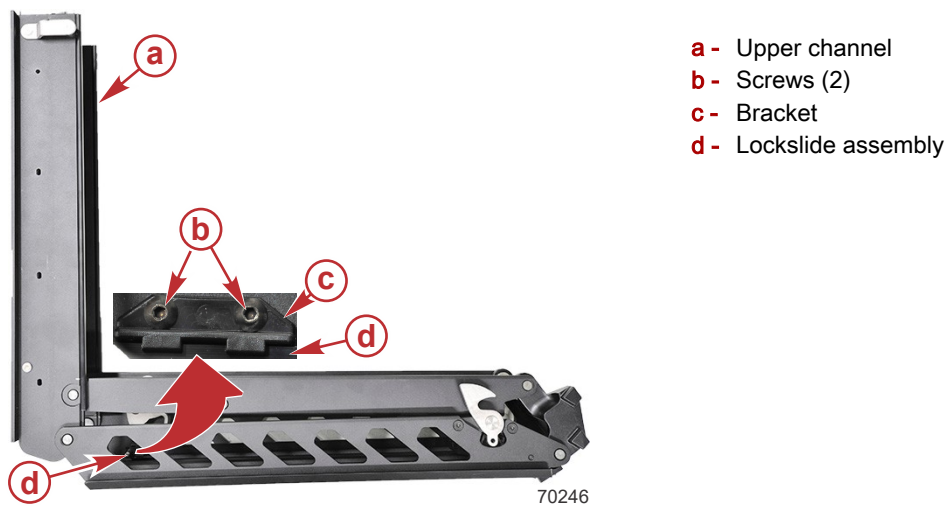


2. Remove the screw and bushing from the front lockslide hook and the lockslide.
3. Repeat the previous step to remove the front lockslide hook from the other side of the lockslide.

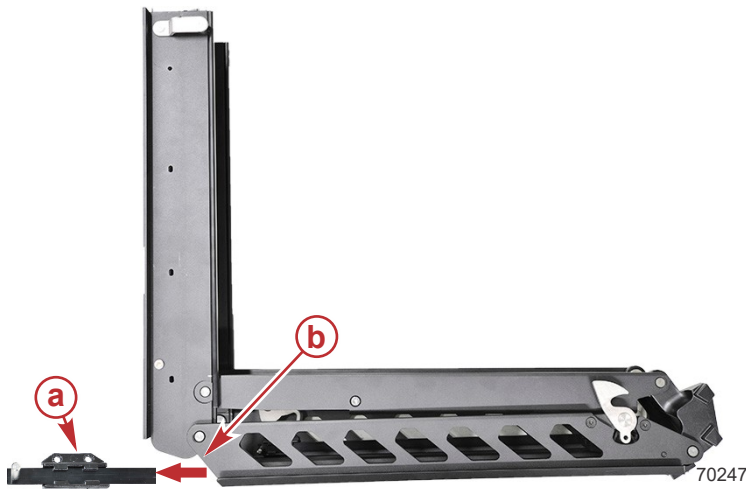


IMPORTANT: Take care to avoid pinching extremities while positioning the mount.

4. Place the mount on a flat surface and positioned at a 90 degree angle.
5. Remove the two screws from the bracket, the lockslide assembly and the upper channel.



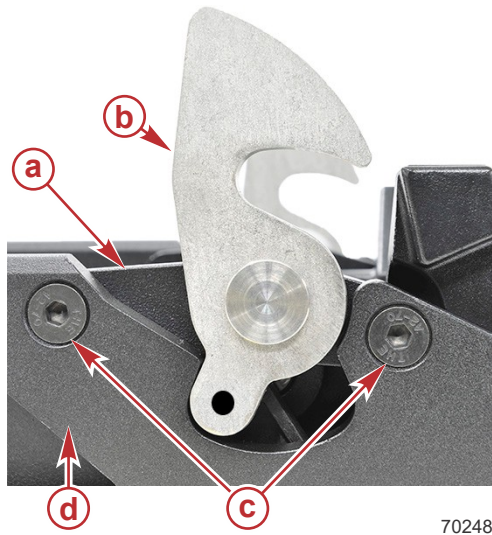
6. Pull the lockslide assembly and the bracket through the rear of the upper channel.



- a - Lockslide assembly
- b - Rear of the upper channel

Front Lockslide Hooks Removal

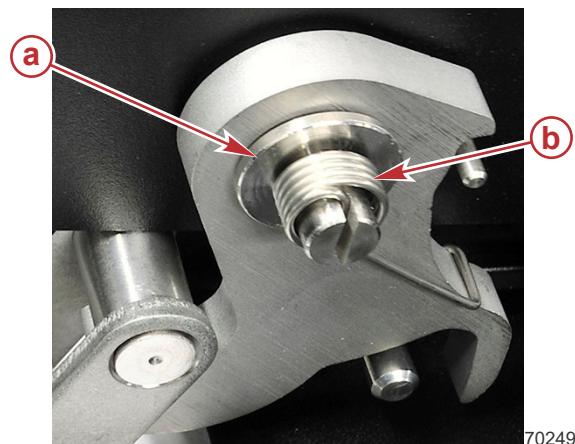
1. Remove the two screws and the front lockslide hook bracket from the upper channel. Discard the screws.
2. Repeat the previous step to remove the front lockslide hook bracket from the other side of the upper channel.



- a - Lockslide hook bracket (2)
- b - Front lockslide hook (2)
- c - Screws (4)
- d - Upper channel

Rear Lockslide Spring Removal

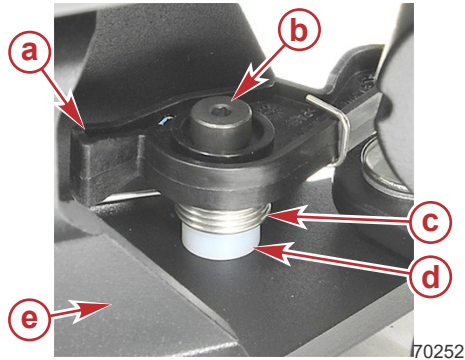
Remove the spring from the rivet.



- a - Rivet
- b - Spring

Safety Blocker Removal

1. Remove the screw, the safety blocker, the spring, and the bushing from the upper channel.



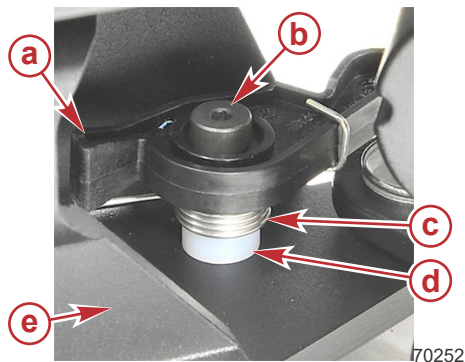
- a - Safety blocker
- b - Screw
- c - Spring
- d - Bushing
- e - Upper channel

2. Repeat the previous step to remove the safety blocker from the other side of the upper channel.

Mount Assembly

Safety Blocker Installation

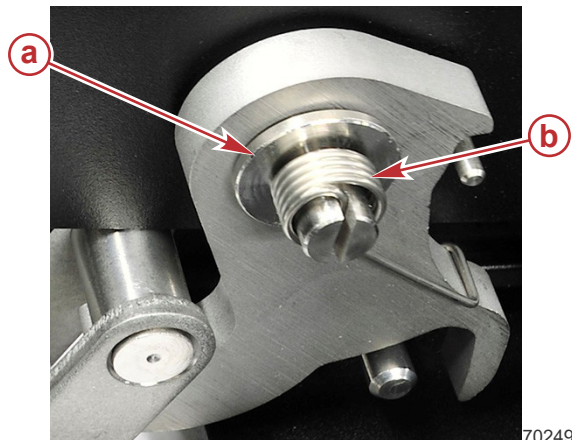
1. Install the bushing, the spring, and the safety latch on the upper channel with the screw.
2. Repeat the previous two steps to install the safety latch on the other side of the upper channel.



- a - Safety latch
- b - Screw
- c - Spring
- d - Bushing
- e - Upper channel

Rear Lockslide Spring Installation

Install the spring on the lockslide hook.



- a - Rivet
- b - Spring

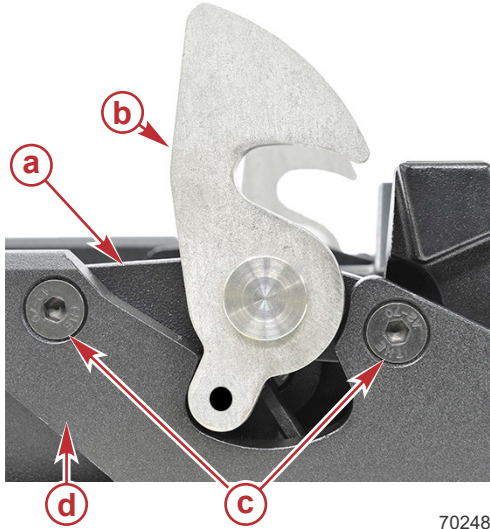
Front Lockslide Hooks Installation

1. Apply loctite to the two new screws and install the front lockslide bracket assembly on the upper channel with the two new screws.
2. Tighten the two screws to the proper specification.

| Description | Nm | lb-in. | lb-ft |
|-------------|----|--------|-------|
| Screw (2) | 11 | 97.4 | - |

| Description | Where Used | Part No. |
|--------------------------|------------|-----------|
| Loctite 242 Threadlocker | Screws | 92-809821 |

- Repeat the previous step to install the front lockslide assembly on the other side of the upper channel.



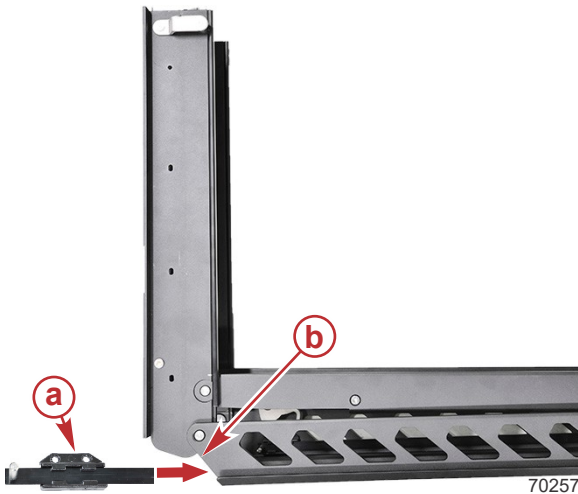
- a** - Lockslide hook bracket (2)
- b** - Front lockslide hook (2)
- c** - Screws (4)
- d** - Upper channel

70248

Lockslide Installation

IMPORTANT: Take care to avoid pinching extremities while positioning the mount.

- Place the mount on a flat surface and positioned at a 90 degree angle.
- Position the lockslide assembly and bracket through the rear of the upper channel.

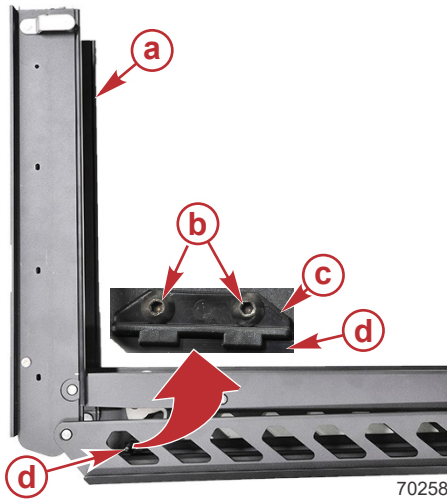


- a** - Lockslide assembly
- b** - Rear of the mount

70257

- Install the lockslide assembly and bracket on the upper channel with the two screws.

| Description | Nm | lb-in. | lb-ft |
|-------------|-----|--------|-------|
| Screw (2) | 3.5 | 31 | - |

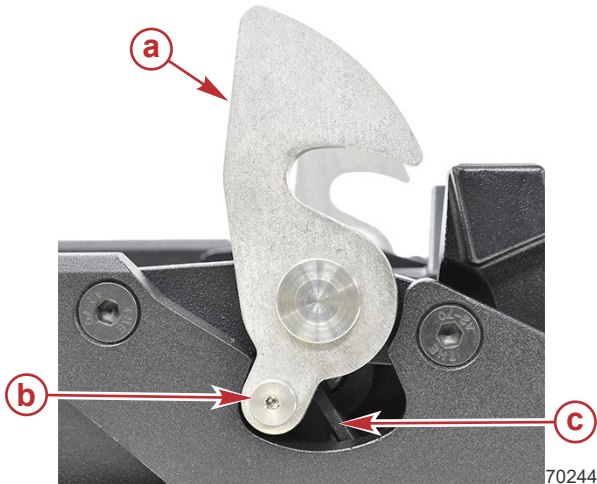


- a - Mount
- b - Screws (2)
- c - Bracket
- d - Lockslide assembly

4. Install the front lockslide hook on the lockslide with the bushing and screw.

| Description | Nm | lb-in. | lb-ft |
|-------------|-----|--------|-------|
| Screw | 1.5 | 13.3 | - |

5. Repeat the previous step to install the front lockslide hook on the other side of the lockslide.



- a - Lockslide hook (2)
- b - Bushing and screw (2)
- c - Lockslide

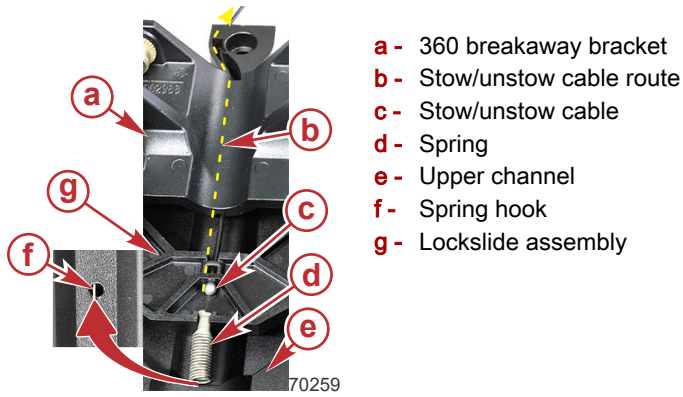
IMPORTANT: Make sure the spring end is positioned with the spring hook flush along the underside of the upper channel.

6. Install the spring on the upper channel and the lockslide assembly.
7. Lubricate all latch strikers, latch hooks, and pivot pins. Refer to **Section 1 A - Lubrication Points**

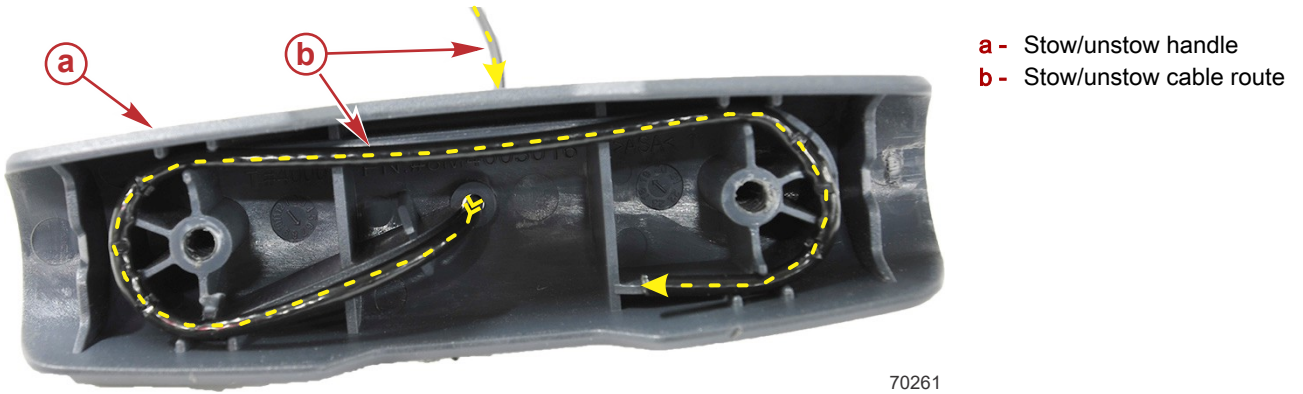
Stow/Unstow Cable Installation

IMPORTANT: Make sure the stow/unstow cable is not pinched or kinked along the stow/unstow cable route.

1. Install the stow/unstow cable through the lockslide assembly bracket and through the 360 breakaway bracket.



2. Install and press the stow/unstow cable along the stow/unstow cable route in the stow/unstow handle.



3. Align the stow/unstow cap on the stow/unstow handle.
4. Install the stow/unstow handle cap on the stow/unstow handle with the two screws.
5. Tighten the screws to the specified torque.

| Description | Nm | lb-in. | lb-ft |
|-------------|-----|--------|-------|
| Screw (2) | 2.5 | 22.1 | - |



HD Stow/Unstow Cable Replacement

Items Required

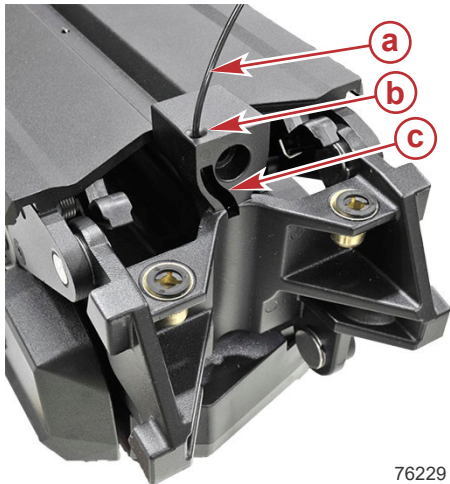
- HD Stow/Unstow Cable kit
- 3/16 drill bit

Stow/Unstow Cable Removal

1. Remove the steering system from the mount. Refer to **Section 3F - Steering System Removal**.
2. Remove the stow/unstow cable from the lockslide. Refer to **Stow/Unstow Cable Removal**.

Mount

3. Push the stow/unstow cable through the stow/unstow cable guide hole in the 360 breakaway bracket, into the **S** curve of the mount assembly (B).

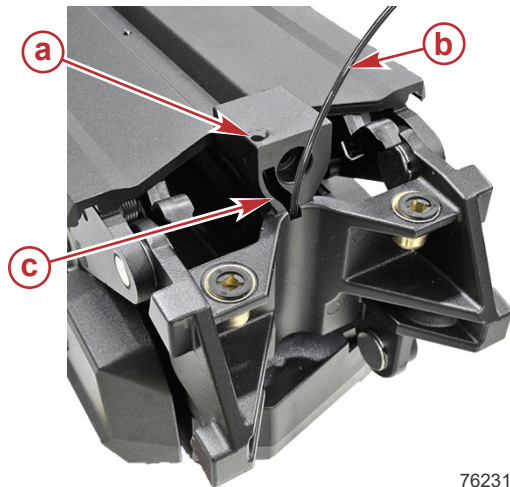


- a - Stow/unstow cable
- b - Stow/unstow cable guide hole
- c - S Curve

76229

NOTE: Excess stow/unstow cable should be left protruding from the **S** curve.

4. Using a 3/16" drill bit, deburr the stow/unstow cable guide hole.

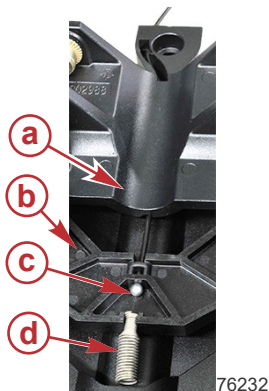


- a - Stow/unstow cable guide hole
- b - Stow/unstow cable
- c - S curve

76231

NOTE: If the system has been previously upgraded with a HD stow/unstow cable, drilling is not required. Proceed to the following step.

5. Install the stow/unstow cable in the lockslide. Refer to **Stow/Unstow Cable Installation**.
6. Install the steering system on the mount. Refer to **Section 3F - Steering System Installation**.
7. Disconnect the spring from the lockslide.
8. Pull the stow/unstow cable through the 360 breakaway bracket and the lockslide.



- a - 360 breakaway bracket
- b - Lockslide
- c - Stow/unstow cable
- d - Spring

76232

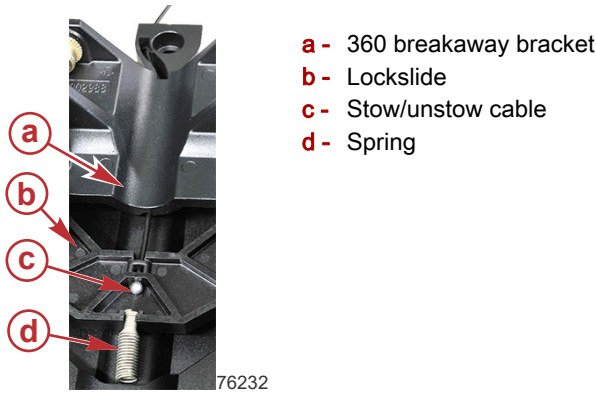
HD Stow/Unstow Cable Installation

1. Install the HD stow/unstow cable, leading with the cable strand end, through the lockslide and the 360 breakaway bracket.

NOTE: The cable should become visible at the top of 360 breakaway bracket, as you push the new cable through the lockslide.

The new cable could require additional guide assistance between the lock slide and the S curve.

2. Connect the spring to the lockslide.



3. Install the new HD stow/unstow cable in the barrel fitting.

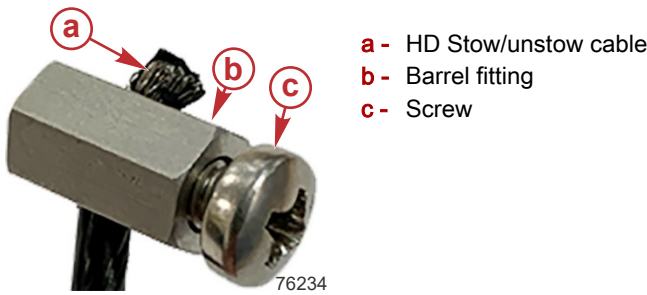
IMPORTANT: Failure to tighten the barrel fitting to the HD Cable strand can result in serious injury or property damage.

4. Apply red thread locker to the screw.

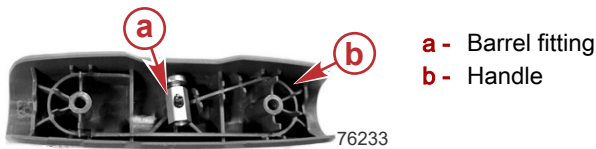
| Description | Where Used | Part No. |
|--------------------------|------------|-----------|
| Loctite 271 Threadlocker | Screw | 92-809819 |

5. Tighten the screw onto the HD stow/unstow cable to the specific torque plus one quarter turn.

| Description | Nm | lb-in. | lb-ft |
|-------------|----|--------|-------|
| Screw | 2 | 17.7 | - |



6. Install the barrel fitting into the handle.



7. Align the stow/unstow cap on the stow/unstow handle.
8. Install the stow/unstow handle cap on the stow/unstow handle with the two screws.
9. Tighten the screws to the specified torque.

Mount

| Description | Nm | lb-in. | lb-ft |
|-------------|-----|--------|-------|
| Screw (2) | 2.5 | 22.1 | - |



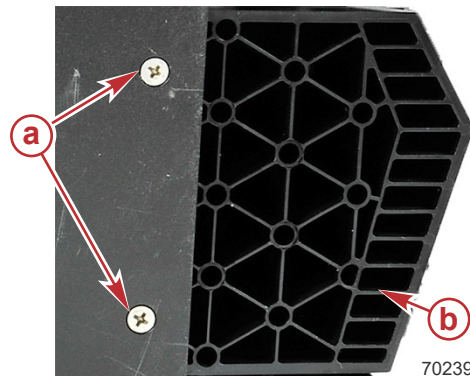
- a - Stow/unstow handle
- b - Stow/unstow cable
- c - Stow/unstow handle cap
- d - Screws (2)

70241

Decket Plate Installation

1. Install the front decket on the lower channel with the two screws.

| Description | Nm | lb-in. | lb-ft |
|-------------|-----|--------|-------|
| Screw (2) | 3.5 | 31 | - |

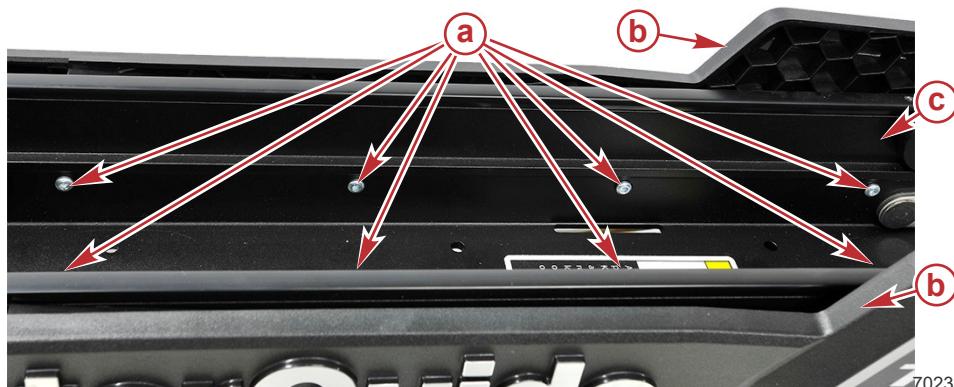


- a - Screws (2)
- b - Front decket

70239

2. Install the two decket plates on the lower channel with the eight screws.

| Description | Nm | lb-in. | lb-ft |
|-------------|-----|--------|-------|
| Screw (8) | 2.5 | 22.1 | - |



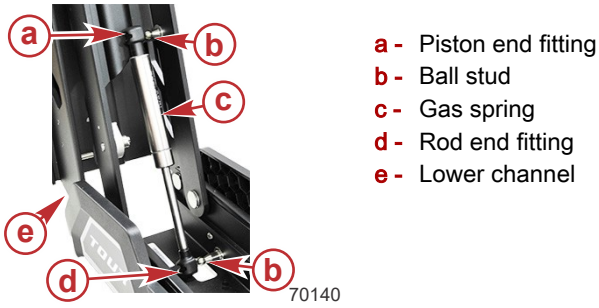
- a - Screws (8)
- b - Decket plates (2)
- c - Lower channel

70236

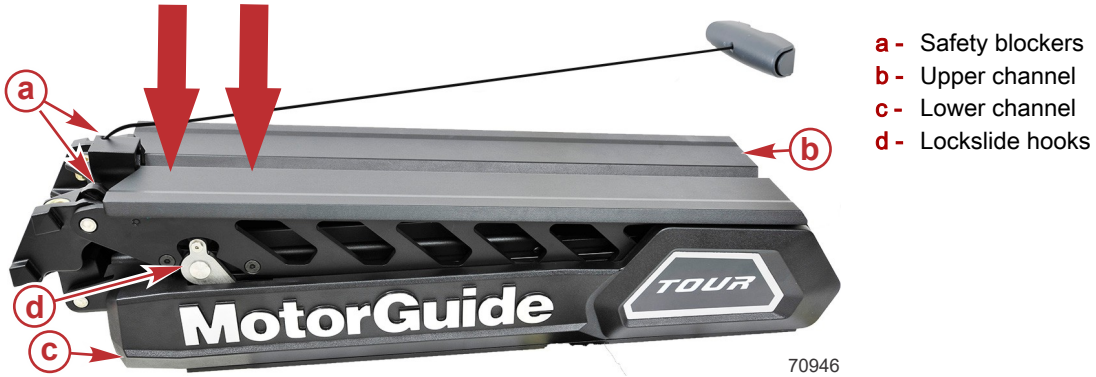
Gas Spring Installation

1. Rotate the mount into the stowed position until the ball end studs align with the gas spring end fittings.
IMPORTANT: Do not install the gas spring with the rod end up. This can result in premature gas spring failure.
2. Push or squeeze the rod end fitting of the gas spring on to the ball stud located on the base of the lower channel.

- Repeat the previous step for the piston end fitting of the gas spring on to the ball stud located on the inner channel.



- Close the mount by applying steady downward pressure to the upper channel while pressing the two safety blockers.
- Release the safety blockers when the front lockside hooks are fully seated in the lower channel.



- Install the steering system on the mount. Refer to **Section 3 F–Steering System Installation**.

Notes: