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 thousands of an inch/mm. 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.

Copyright and Trademark Information

Manual Outline

General Information

1
A

Section 1A - General Information

Table of Contents

Lubricants, Sealants, Adhesives

Tube Ref No.	Description	Where Used	Part No.
95	2-4-C with PTFE	Depth collar knob screw threads Slot on the foot release lever linkage	92-802859A 1
120	Corrosion Guard	Locking rails	92-802878 55

Inspection and Maintenance Schedule

Before Each Use

- Inspect for loose or corroded wiring connections.
- Check the tightness of the battery cable connections. Nylock nuts are recommended for securing the battery cables to their terminals.
- Check the tightness of the propeller nut.
- Check the propeller blades for damage.
- Check the tightness of the mount to the deck of the boat.

After Each Use

- Disconnect the battery cables from the power source or unplug the motor from the boat.
- Check each side of the propeller and propeller shaft for debris such as weeds and fishing line. Remove all debris.
- Check the tightness of the propeller nut.
- Wash the trolling motor with clean water and a mild soap such as Attwood® Premium Boat Wash to remove dirt and dust that may scratch the surface.
- Wipe the trolling motor column down to remove dirt and dust that may prevent the column from operating smoothly.

IMPORTANT: Do not use harsh cleaners such as bleach or citrus cleaners to clean the trolling motor. These cleaners can damage the finish on the trolling motor.

IMPORTANT: Do not power wash the trolling motor.

Every 100 Hours of Use or Annually (Whichever Occurs First)

1. Apply 2-4-C with PTFE to the depth collar knob screw threads.

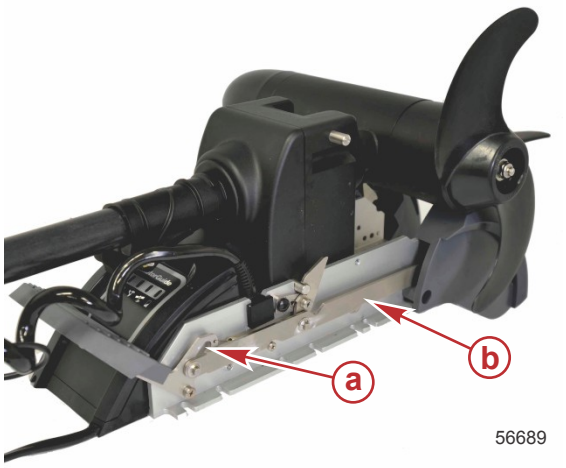
Tube Ref No.	Description	Where Used	Part No.
95	2-4-C with PTFE	Depth collar knob screw threads	92-802859A 1

2. Remove the side panels by removing the two screws on each side of the mount. Gently pull the cover away from the mount and towards the foot release lever.

a - Depth collar knob screw threads
b - Screws securing the side panel

3. Apply 2-4-C with PTFE to the slot on the foot release lever linkage on each side of the deck mount. Press the foot release lever and apply more 2-4-C with PTFE to the slot, equally distributing the grease along the length of the slot.

NOTE: *For trolling motors used in saltwater, apply Corrosion Guard or an equivalent corrosion blocker to the locking rails to prevent corrosion.*



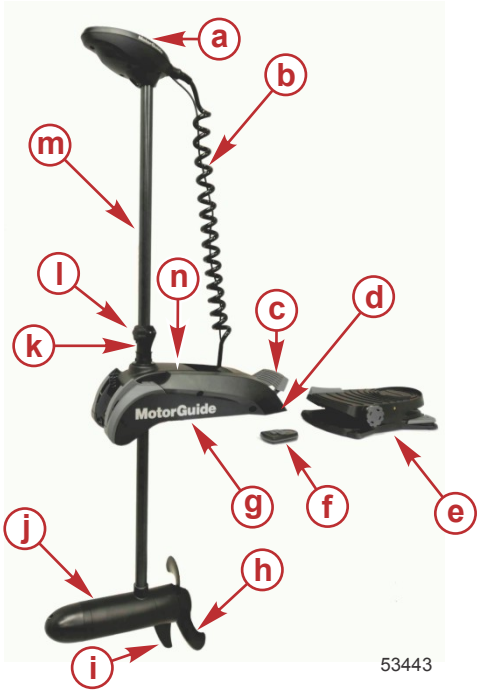
a - Slot
b - Locking rail

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

Tube Ref No.	Description	Where Used	Part No.
120	Corrosion Guard	Locking rails	92-802878 55
95	2-4-C with PTFE	Slot on the foot release lever linkage	92-802859A 1

4. Install the side panels onto the deck mount and tighten the screws.
5. Check the tightness of the mounting screws, nuts, and other fasteners.
6. Inspect the battery. Refer to **Section 1B - Battery Inspection**.

Component Identification



a - Head assembly
b - Curly cable
c - Stow/deploy release pedal
d - Battery cables (hidden)
e - Wireless foot pedal
f - Handheld wireless remote

NOTE: *Standard and Pinpoint GPS versions are equipped with different wireless remotes.*

g - Mount
h - Propeller
i - Skeg
j - Lower unit
k - Depth collar
l - Depth collar knob
m - Composite column
n - Steering transmission

Xi5 Model Specifications

Starting serial number 9D190157

Model Part Number	Model	Special Features	Shaft	Volts	Thrust	Speeds	Control
940800170	Xi5-55 FW	–	121.9 cm (48 in.)	12 V	25 kgf (55 lbf)	20	Foot pedal
940800180	Xi5-55 FW	–	137.2 cm (54 in.)	12 V	25 kgf (55 lbf)	20	Foot pedal
940800080	Xi5-80 FW	–	137.2 cm (54 in.)	24 V	36.3 kgf (80 lbf)	20	Foot pedal
940800090	Xi5-80 FW	–	152.4 cm (60 in.)	24 V	36.3 kgf (80 lbf)	20	Foot pedal
940800130	Xi5-105 FW	–	137.2 cm (54 in.)	36 V	47.6 kgf (105 lbf)	20	Foot pedal
940800140	Xi5-105 FW	–	152.4 cm (60 in.)	36 V	47.6 kgf (105 lbf)	20	Foot pedal
940800190	Xi5-55 FW	Sonar	121.9 cm (48 in.)	12 V	25 kgf (55 lbf)	20	Foot pedal
940800200	Xi5-55 FW	Sonar	137.2 cm (54 in.)	12 V	25 kgf (55 lbf)	20	Foot pedal
940800110	Xi5-80 FW	Sonar	137.2 cm (54 in.)	24 V	36.3 kgf (80 lbf)	20	Foot pedal
940800120	Xi5-80 FW	Sonar	152.4 cm (60 in.)	24 V	36.3 kgf (80 lbf)	20	Foot pedal
940800150	Xi5-105 FW	Sonar	137.2 cm (54 in.)	36 V	47.6 kgf (105 lbf)	20	Foot pedal
940800160	Xi5-105 FW	Sonar	152.4 cm (60 in.)	36 V	47.6 kgf (105 lbf)	20	Foot pedal
941700060	Xi5-55 SW	–	121.9 cm (48 in.)	12 V	25 kgf (55 lbf)	20	Handheld remote
941700070	Xi5-55 SW	–	137.2 cm (54 in.)	12 V	25 kgf (55 lbf)	20	Handheld remote
941700020	Xi5-80 SW	–	137.2 cm (54 in.)	24 V	36.3 kgf (80 lbf)	20	Handheld remote
941700030	Xi5-80 SW	–	152.4 cm (60 in.)	24 V	36.3 kgf (80 lbf)	20	Handheld remote
941700040	Xi5-105 SW	–	137.2 cm (54 in.)	36 V	47.6 kgf (105 lbf)	20	Handheld remote
941700050	Xi5-105 SW	–	152.4 cm (60 in.)	36 V	47.6 kgf (105 lbf)	20	Handheld remote
940800210	Xi5-55 FW	Sonar, GPS	121.9 cm (48 in.)	12 V	25 kgf (55 lbf)	20	Foot pedal and handheld remote
940800220	Xi5-55 FW	Sonar, GPS	137.2 cm (54 in.)	12 V	25 kgf (55 lbf)	20	Foot pedal and handheld remote
940800230	Xi5-80 FW	Sonar, GPS	137.2 cm (54 in.)	24 V	36.3 kgf (80 lbf)	20	Foot pedal and handheld remote
940800240	Xi5-80 FW	Sonar, GPS	152.4 cm (60 in.)	24 V	36.3 kgf (80 lbf)	20	Foot pedal and handheld remote
940800250	Xi5-105 FW	Sonar, GPS	137.2 cm (54 in.)	36 V	47.6 kgf (105 lbf)	20	Foot pedal and handheld remote
940800270	Xi5-80 FW	Sonar, GPS	114.3 cm (45 in.)	24V	36.3 kgf (80 lbf)	20	Foot pedal and handheld remote

Model Part Number	Model	Special Features	Shaft	Volts	Thrust	Speeds	Control
940800260	Xi5-105 FW	Sonar, GPS	152.4 cm (60 in.)	36 V	47.6 kgf (105 lbf)	20	Foot pedal and handheld remote
941700080	Xi5-55 SW	GPS	137.2 cm (54 in.)	12 V	25 kgf (55 lbf)	20	Handheld remote[1].
941700090	Xi5-80 SW	GPS	152.4 cm (60 in.)	24 V	36.3 kgf (80 lbf)	20	Handheld remote[1].
941700100	Xi5-105 SW	GPS	152.4 cm (60 in.)	36 V	47.6 kgf (105 lbf)	20	Handheld remote[1].

1. Saltwater Pinpoint GPS versions are equipped with a handheld remote only.

Notes:

General Information

Section 1B - Wiring and Battery

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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	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 which accompany your battery.

1. Ensure that the battery is secured to the vessel.
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 equipped with a battery box to prevent 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.
- 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-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.
- 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 recently.
2. Do not break live circuits at the battery terminals, 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 the 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.

- 9 volt minimum cutoff for 12 volt systems.
- 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.

- 16 volt maximum for 12 volt systems.
- 31 volt maximum for 24 volt systems.
- 48 volt maximum for 36 volt systems.

Establishing a Common Ground

A common ground (–) connection increases sonar sensitivity, improves sonar display, avoids the ground circuit as a possible source of corrosion or electrolysis, and reduces interference with other electronic equipment. For 12-volt trolling motor applications, connect the negative (–) terminal on the trolling motor battery to the negative (–) terminal on the engine starting battery with a common ground cable to establish a common ground.

For 24-volt and 36-volt trolling motors, a common ground (–) connection cannot be established with the 12-volt electrical system in the boat due to the different circuit voltages. As a general rule to reduce interference with other electronics on your boat, route all battery wiring away from other boat wiring (opposite side of the boat if possible), keep the battery cable length as short as possible, and always use battery cables of the appropriate size (gauge).

Electrolysis

Using the main engine battery as a power source for the trolling motor may cause electrolysis on metallic parts. If the motor and battery wiring are installed correctly and electrolysis issues continue, separate the trolling motor from any other boat electronics. Using the main engine battery as a power source for the trolling motor is not recommended. Refer to **Battery Connection** for correct installation.

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.

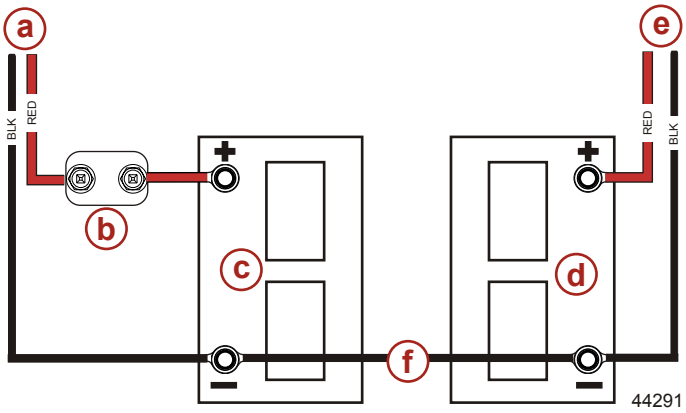
IMPORTANT: Refer to the decal on the top housing of the trolling motor to determine the voltage requirements of your trolling motor.

12-Volt Battery Connection

1. Starting with the negative (–) lead, disconnect the battery cables from the engine starting battery.
2. Install a manual reset circuit breaker in line with the trolling motor power cable positive (+) lead and the trolling motor battery positive (+) terminal.
3. Connect the positive (+) trolling motor lead to the positive (+) trolling motor battery terminal.
4. Connect the negative (–) trolling motor lead to the negative (–) trolling motor battery terminal.
5. Connect a jumper cable (common ground bond) from the trolling motor battery negative (–) terminal to the engine battery negative (–) terminal.

   NOTE: *Vessels using 12-volt trolling motors with multiple batteries must have a common ground bonding circuit. Not establishing a common ground between the vessel batteries may cause severe corrosion, electrolysis, or electrical shock.*

   NOTE: *The common ground bond cable should be no more than one wire size (gauge) smaller than the battery cables, nor smaller than 16-gauge (AWG). The common ground bond cable must be insulated, and secured to the negative (–) battery terminals with ring-style connectors.*
6. Starting with the positive (+) lead, reconnect the battery cables to the engine starting battery.



12-volt battery connection with common ground bond

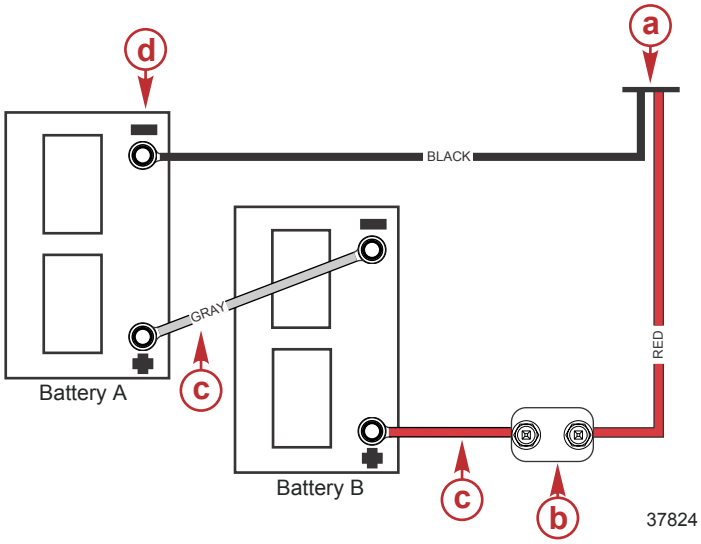
- **a -** Power cables to trolling motor
- **b -** Manual reset circuit breaker
- **c -** Trolling motor battery
- **d -** Engine starting battery
- **e -** Power cables to engine
- **f -** Common ground (–) bond cable

24-Volt Battery Connection

1. Starting with the negative (–) lead, disconnect the battery cables from the engine starting battery.
2. Install a 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.



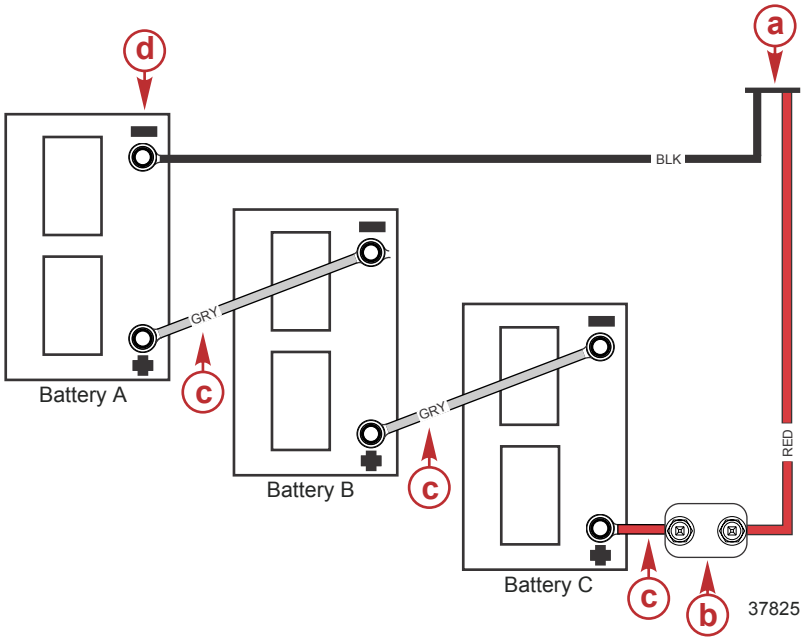
a - Power cables to trolling motor
b - Manual reset circuit breaker
c - Jumper wire (not supplied)
d - Negative (–) battery terminal

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 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**.

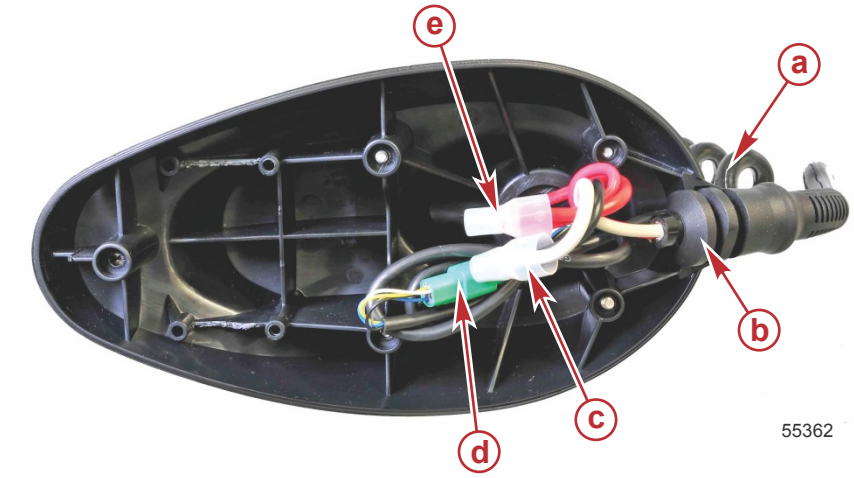
   IMPORTANT: The jumper wire should be the same wire gauge as the negative (–) and positive (+) power cables.
5. Connect a jumper wire (reference gray) between the negative (–) terminal on battery **B** to the positive (+) terminal on battery **A**.
6. Connect the trolling motor negative (–) lead to the negative (–) terminal on battery **A**.
7. Starting with the positive (+) lead, reconnect the battery cables to the engine starting battery.



a - Power cables to trolling motor
b - Manual reset circuit breaker
c - Jumper wire (not supplied)
d - Negative (–) battery terminal

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

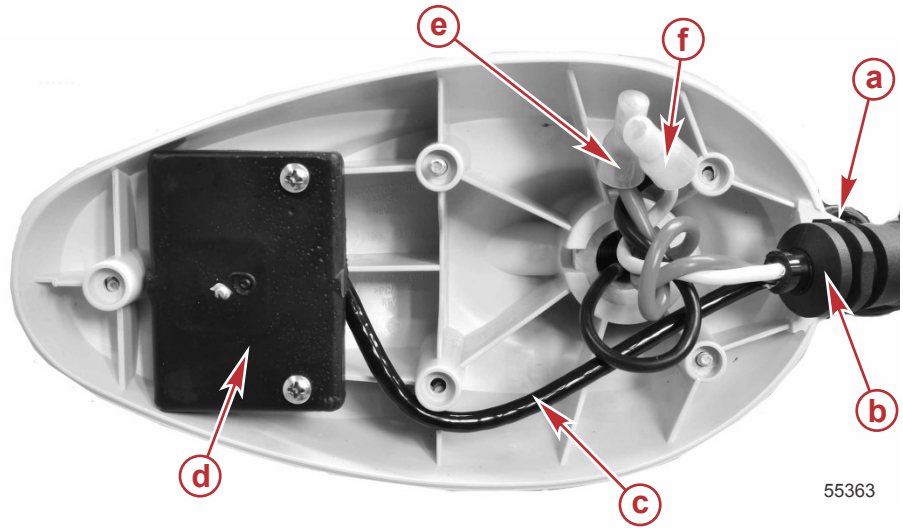
Trolling Motor Head Assembly Wiring



Xi5 with integrated sonar

- **a -** Curly cable
- **b -** Cable grommet
- **c -** White/black (–) battery lead connection
- **d -** Sonar harness connector to lower unit
- **e -** Red (+) battery lead connection

NOTE: *Sonar and Pinpoint GPS are optional equipment. Sonar may be present on Xi5 and Pinpoint GPS models.*



Xi5 with Pinpoint GPS installed

- **a -** Curly cable
- **b -** Cable grommet
- **c -** GPS cable
- **d -** GPS module
- **e -** Red (+) battery lead connection
- **f -** White/black (–) battery lead connection

Troubleshooting

Section 2A - Troubleshooting

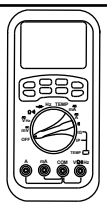
2 A

Table of Contents

Lubricants, Sealants, Adhesives

Tube Ref No.	Description	Where Used	Part No.
125	Heat Transfer Compound	Bottom surface of the control module	92-805701

Special Tools

DMT 2004 Digital Multimeter	91-892647A01
 4516	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.

Basic Troubleshooting Guidelines

Refer to the following guidelines when diagnosing a problem with the MotorGuide product. These guidelines will help you determine a repair solution quickly. Individual parts are not serviceable, but are replaced on a component level (such as controller boards, foot pedals, etc.). No board-level diagnostics are required. Once the faulty component is found, replace it with a new component. The only test equipment required is a digital volt-ohm meter (DVOM).

1. When diagnosing a problem with the MotorGuide product, first determine if the failure is electrical or mechanical. Sometimes, mechanical failures such as looseness or binding of the steering mechanism can appear to be an electrical problem.
2. If the problem is electrical, determine which component is directly associated with the problem. In the Xi5 Wireless motor, there are two possible sources for the error:
   - The foot pedal
   - Communication problems with the controller board or lower unit
3. Check all associated wiring for defects such as broken contacts, loose connections, disconnected plugs, or abraded wires. Sometimes a wire can be broken beneath the insulation but show no physical signs of damage. This sometimes happens near crimp connections that have been mishandled and can cause intermittent operation.
4. Check for power at all of the modules. Refer to the **Xi5 Electronics Wiring Diagram**.
5. Temporarily replace a suspected bad controller board with a known-good controller board to isolate the problem. Substitute only one part at a time.

NOTE: *For service information, contact any certified MotorGuide service center. For a full listing of MotorGuide service centers, go to www.motorguide.com or contact any Mercury Marine service office.*

Basic Troubleshooting

Symptom	Possible Cause	Resolution
Trolling motor does not respond to wireless commands	Weak trolling motor batteries	Check the battery charge indicator on the trolling motor. Recharge or replace batteries as required.
	Weak handheld remote battery or weak foot pedal battery	Replace the handheld remote battery (one AAA-size) or foot pedal batteries (two AA-size).
	Wireless controllers not synced	Refer to **Section 3D - Activating the Wireless Foot Pedal** or **Activating the Handheld Remote**.

Symptom	Possible Cause	Resolution
Loss of power	Weak trolling motor batteries	Check the battery charge indicator on the trolling motor. Recharge or replace the batteries as required.
	Loose or corroded battery connections	Inspect battery connections for cleanliness and tightness.
	Propeller is loose, damaged, or off-balance	Refer to **Section 3C - Propeller Replacement**.
	Wiring or electrical connection faulty	Wire gauge from the battery to the trolling motor is insufficient. 6-gauge wire is recommended.
	Magnets cracked or chipped	The motor will whine or grind. Refer to **Section 3C - Lower Unit**.
	Water intrusion in the lower unit	Refer to **Section 3C - Lower Unit**.
Excessive noise or vibration	Propeller is loose, damaged, or off-balance	Refer to **Section 3C - Propeller Replacement**.
	Damaged bearings or bushings	Refer to **Section 3C - Lower Unit**.
	Magnets interfering with armature ***NOTE:*** *The motor may emit sounds similar to marbles rattling in this situation.*	Turn off the power and manually rotate the propeller. If the propeller does not rotate freely with a slight magnetic drag, refer to **Section 3C - Lower Unit**.
	Magnets cracked or chipped	The motor will whine or grind. Refer to **Section 3C - Lower Unit**.
	Bent armature shaft. Replace the armature.	
Motor failure (motor runs at partial speed)	Loose electrical connections	Connections in the head may be loose or damaged. Refer to **Section 1B - Trolling Motor Head Assembly Wiring**.
	Thermal protection is overloaded	Temperature exceeds specification. Refer to **Section 3C - Lower Unit**.
	Propeller is loose, damaged, or off-balance	Refer to **Section 3C - Propeller Replacement**.

Symptom	Possible Cause	Resolution
Motor failure (motor does not run)	Weak trolling motor batteries	Check the battery charge indicator on the trolling motor. Recharge or replace the battery as required.
	Loose or corroded battery connections	Inspect battery connections for cleanliness and tightness.
	Wiring or electrical connection faulty	Wire gauge from the battery to the trolling motor is insufficient. 6-gauge wire is recommended.
	Loose electrical connections	Inspect connections for cleanliness and tightness.
	Thermal protection is overloaded	Disconnect the trolling motor batteries and check for weeds or debris around the propeller.
		Temperature exceeds specification. Refer to **Section 3C - Lower Unit**.
	Fuse or circuit breaker is open	Replace the fuse or reset the circuit breaker only after determining the root cause of the problem.
	Magnets interfering with armature ***NOTE:*** *The motor may emit sounds similar to marbles rattling in this situation.*	Turn off the power and manually rotate the propeller. If the propeller does not rotate freely with a slight magnetic drag, refer to **Section 3C - Lower Unit**.
	Boat wiring faulty	Refer to **Section 1B - Wiring and Battery**.
Inaccurate temperature reading (models with internal sonar)	Lower unit not fully submerged	Adjust the depth of the motor. Ensure that the lower unit is fully submerged.
	Damaged nose cone	Replace the nose cone. Refer to **Section 3C - Lower Unit**.
	Damaged sonar cable	Replace the sonar cable. Refer to **Section 3C - Lower Unit**.
Motor is difficult to deploy or return to stowed position	Sticking latch mechanism	Lubricate the latch mechanism. Refer to **Section 1A - Inspection and Maintenance Schedule**.
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.
	Bent armature shaft	Refer to **Section 3C - Lower Unit**.

Speed Control System Troubleshooting

NOTE: *For service information, contact any certified MotorGuide Service Center. For a full listing of MotorGuide service centers, go to www.motorguide.com or contact any Mercury Service office. Refer to* ***Mercury Marine Service Offices****.*

Loss of Power

When connected to power, the motor does not turn on.

1. Verify the power supply for proper voltage. For battery voltage cutoff and overvoltage information, refer to **Section 1B - Battery Cutoff Voltage**.

DMT 2004 Digital Multimeter	91-892647A01

2. Inspect the battery for faulty wiring, corrosion, reversed battery polarity or other battery issues. Repair or replace the defective components. Refer to the safety and maintenance instructions that accompany your battery.

3. Inspect the circuit breaker or fuse (if equipped) for an open condition or for a blown fuse. Replace the fuse or reset the circuit breaker only after determining the root cause of the problem.
4. Verify that the propeller is not loose, damaged, or off-balance. Tighten the propeller nut if necessary. Replace the propeller if it is damaged or off-balance.
5. Inspect the electrical connections and internal wiring. Verify the connections in the top housing are not loose, damaged, or corroded. Clean and check all connections.
6. Inspect the wiring and electrical connections from the boat to the trolling motor. The wire gauge from the battery to the trolling motor may be insufficient. Six-gauge wire is recommended.
7. Use a multimeter to determine voltage at the shaft. The motor control wires may be damaged. Inspect the lower unit.
8. Inspect the lower unit for water intrusion.

Propeller Does Not Turn

When the trolling motor is throttled up, the propeller does not rotate.

1. Disconnect the motor control wires coming out of the control module and hook them up to a known-good battery. If the propeller turns, the problem is in the control module, foot pedal, or lower unit.
2. Substitute a known-good foot pedal to determine if the foot pedal has failed.
3. Replace the control module with a known-good component to determine if the control module has failed. If a known-good control module does not correct the problem, inspect the lower unit.
4. Determine if the motor brushes are stuck.
5. If the brush contact is good, check the armature for shorts. Refer to **Checking the Armature for Short Circuits**.

Motor Runs at High Speed Only

When connected to power, the motor turns on at high speed.

1. Inspect the internal wiring and foot pedal for faulty electrical connections.
2. Substitute a known-good foot pedal to determine if the foot pedal has failed.
3. If all electrical connections are good and the foot pedal works, replace the control module.

Motor Runs at Partial Speed or has Low Power

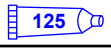
When connected to power, the motor amperage will change unexpectedly.

1. Turn the motor off to cool down. Temperatures may have exceeded specification.
2. Verify the power supply for proper voltage. For battery voltage cutoff and overvoltage information, refer to **Section 1B - Battery Cutoff Voltage**.
3. Verify that the propeller is not loose, damaged, or off-balance. Tighten the propeller nut if necessary. Replace the propeller if it is damaged or off-balance.
4. Inspect the electrical connections and internal wiring. Verify that the connections in the top housing are not loose, damaged, or corroded. Clean and check all connections.
5. Inspect the armature for shorts or overheating. Refer to **Checking the Armature for Short Circuits**.
6. Inspect the magnets for damage or demagnetization.

Motor Power Fades After a few Minutes

The motor runs fine for several minutes but loses power shortly after.

1. The control module may be overheating due to poor heat sinking, a lack of thermal grease between the bottom of the control module and the mount, or due to an over-current condition.
2. Inspect the control module for proper installation. Clean the bottom surface of the module and apply Heat Transfer Compound.

Tube Ref No.	Description	Where Used	Part No.
	Heat Transfer Compound	Bottom surface of the control module	92-805701

3. Inspect the armature for shorts or overheating. Refer to **Checking the Armature for Short Circuits**.

Steering Control System Troubleshooting

The steering system consists of the steering motor transmission assembly, and the control module. Before diagnosing a hardware problem with the steering, ensure that the transmission wires have not pulled out of the steering transmission.

Unable to Control the Steering

The steering control system does not respond to commands or will not steer correctly.

1. Check the steering depth collar and knob for proper operation and engagement into the steering transmission.
2. Check that the steering depth collar and knob is not broken or loose. Replace the steering depth collar if necessary.
3. If the trolling motor turns to one direction and will not stop turning (causing the cables to wrap around the trolling motor column), remove the batteries from the foot pedal. Substitute a known-good foot pedal and test the steering functions again.

Steers to One Direction Only

1. Check that the foot pedal or key fob is fully operational and does not have damage to any buttons, or has water inside. Substitute a known-good foot pedal or key fob to test.
2. Check that the control module is functional. Substitute a known-good control module and test the steering.

Steering Overshoots or Oscillates

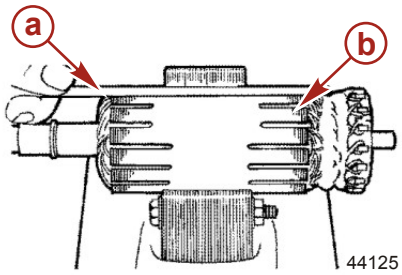
1. Check the steering depth collar and knob for proper operation and engagement into the steering transmission.
2. Check that the steering depth collar and knob is not broken or loose. Replace the steering depth collar if necessary.

Motor Does Not Steer

1. Verify that the batteries in the foot pedal or key fob are good. Train another foot pedal or key fob to the unit and see if it will steer. Refer to **Section 3D - Activating the Wireless Foot Pedal** or **Activating the Handheld Remote**. Replace the foot pedal or key fob if this corrects the problem.
2. Inspect all wiring from the control module to the steering transmission. Ensure that there are no broken contacts, loose connections, or abraded/broken wires.
3. Check for 12 volts from the control module when the trolling motor is instructed to turn. If the control module does not supply 12 volts to the steering motor, the control module is suspect.
4. Power the steering transmission directly from a 12 volt power source. If the motor steers, the control module is suspect.
5. Check that the control module is functional. Substitute a known-good control module and test the steering.

Testing

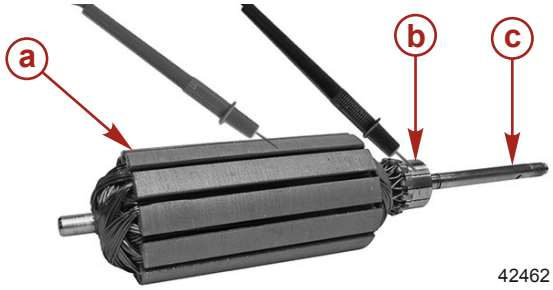
Checking the Armature for Short Circuits



a - Hacksaw blade
b - Armature

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



a - Armature core
b - Commutator
c - Shaft

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.

DMT 2004 Digital Multimeter	91-892647A01

Interference Troubleshooting

Interference may occur due to a variety of causes, such as the depth finder location, the depth finder 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 screen) then turn 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 high-bypass (full-throttle) mode.
2. If the interference stops, the pulse-width modulation is causing the interference. Ensure that the trolling motor wiring is as far away from the depth finder transducer and depth finder wiring as possible.
3. If the interference continues or decreases slightly, the trolling motor may be shorted or there is a problem with the boat wiring.

No Temperature Reading—Sonar Models

Verify that the sonar unit has a compatible connection. For sonar unit compatibility information, refer to www.motorguide.com.

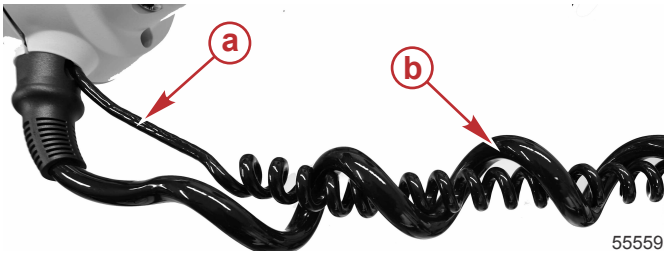
1. Test the sonar display with a working transducer to ensure that the sonar display is operative. Verify that the sonar screen displays both the temperature and depth. When connected properly, the temperature should not be blinking.
2. Ensure that the lower unit is submerged at least 15 cm (6 in.) for an accurate temperature reading. Refer to the owner's manual for adjusting the motor depth.
3. Test the sonar cable for damage. Using a new cable assembly transducer, remove the top housing and plug in the new sonar cable to test the sonar display. If the sonar display reading is good, replace the sonar cable. Refer to **Section 3C - Sonar Nose Cone Subassembly**.
4. Test the nose cone for damage. Using a new nose cone assembly, remove the top housing and plug in the new sonar cable to test the sonar display. If the sonar display reading is good, replace the nose cone assembly. Refer to **Section 3C - Sonar Nose Cone Subassembly**.

Pinpoint GPS Troubleshooting

Not Aquiring a Fixed GPS Position and Losing GPS Lock

1. Ensure that the trolling motor is powered up and is connected to correct system voltage depending on model (12, 24, or 36 VDC). The trolling motor will emit one beep when it is powered up, and the GPS status indicator light will illuminate.

2. Ensure that the Pinpoint GPS cable is installed.



a - Pinpoint GPS cable
b - Power cable

3. Check the operation of the Pinpoint GPS system by deploying the trolling motor. To acquire a fixed GPS position, the following conditions must be met:
   - A location with a clear view of the sky (not inside a building or under trees)
   - The trolling motor must be in the deployed position
   - 30–45 seconds will be required to acquire a fixed GPS position in ideal conditions (wide open area)
   - 1–2 minutes will be required in nonideal conditions (area near tall trees or buildings)

   IMPORTANT: The trolling motor will emit a three-beep tune and the GPS status indicator light will illuminate, once it has acquired a fixed GPS position.
4. If the trolling motor will not acquire a fixed GPS position, move the trolling motor to the stowed position, then deploy the trolling motor again.
5. If the trolling motor still does not acquire a fixed GPS position, disconnect the trolling motor from the power supply for 30 seconds, then connect the trolling motor and repeat the procedure.
6. If the trolling motor will not acquire a fixed GPS position, replace the GPS modules and retest. Refer to **Replacing the GPS Modules**.

GPS Status Indicator Light Does Not Illuminate

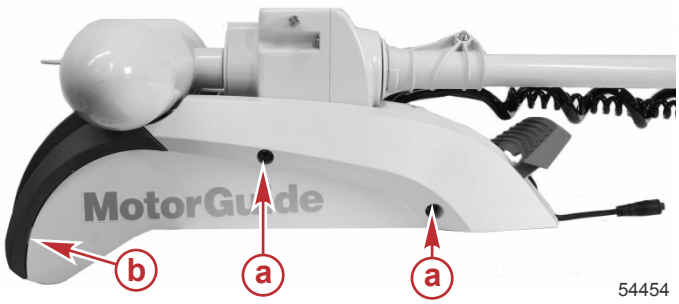
1. Check the operation of the Pinpoint GPS system by deploying the trolling motor. To acquire a fixed GPS position, the following conditions must be met:
   - A location with a clear view of the sky (not inside a building or under trees)
   - The trolling motor must be in the deployed position
   - 30–45 seconds will be required to acquire a fixed GPS position in ideal conditions (wide open area)
   - 1–2 minutes will be required in nonideal conditions (area near tall trees or buildings)

   IMPORTANT: The trolling motor will emit a three-beep tune and the GPS status indicator light will illuminate, once it has acquired a fixed GPS position.
2. If the conditions in Step 1 are met and the GPS status indicator light does not illuminate, update the GPS program using the reprogramming dongle. Contact a Mercury Marine Service Office.

Status Indicator Light Panel Does Not Function (Motor Fully Functional)

Perform the following steps to inspect the status indicator light harness for damage, and verify that the harness is plugged in correctly. If no damage is found, and the harness is plugged in correctly, replace the status indicator light panel.

1. Remove the two screws securing each side panel cover to the trolling motor. Remove both side panel screws, taking care not to damage the locating tabs.

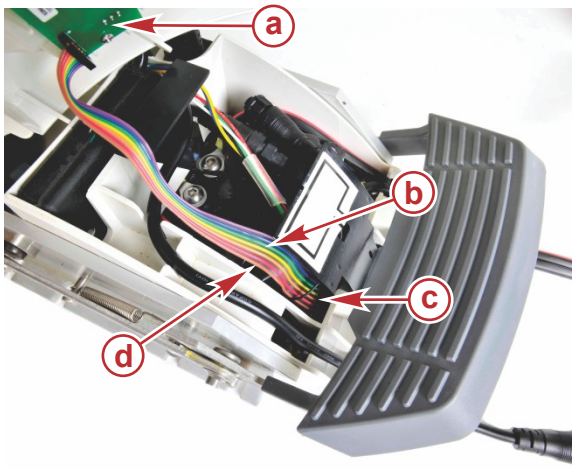


a - Side panel screws
b - Locating tab

2. Move the trolling motor to the deployed position.

3. Remove the status indicator light panel.

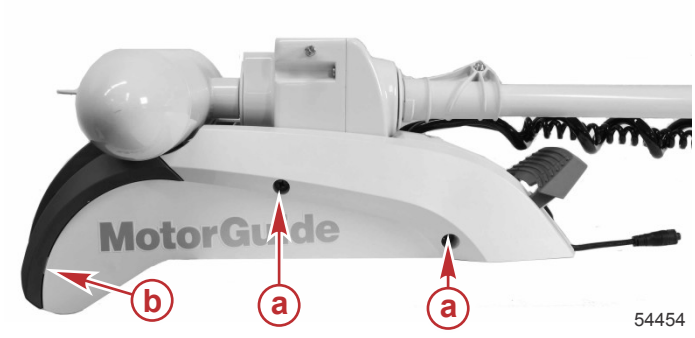
4. Inspect the status indicator light harness for damage, and verify that there is no damage or corrosion on the connector or pins on the wireless controller board. Verify that the harness is plugged in correctly (with the orange wire nearest to the GPS module holder). If no damage or corrosion is found, and the harness is plugged in correctly, replace the status indicator light panel.



a - Status indicator light panel
b - Status indicator light harness
c - Harness connector
d - Orange wire (nearest to the GPS module holder)

5. Install the status indicator light panel.

6. Install the side panel covers, taking care not to damage the locating tabs. Install the 1/4 x 0.50 in. stainless steel screws and tighten them to the specified torque.



a - Side panel screws
b - Locating tab

Description	Nm	lb-in.	lb-ft
1/4 x 0.50 in. stainless steel screws	5.1	45	–

Status Indicator Light Panel Does Not Function (Motor Not Functional)

If the status indicator light panel does not function, and the motor is also not functional, substitute a known-good wireless controller board and test the trolling motor functions. Refer to **Section 3E - Wireless Controller Board**.

Head Makes Two or More Complete Turns in Anchor Mode (Without Unwinding the Curly Cable)

Refer to the following procedure if the trolling motor head makes two or more complete turns while in anchor mode and does not unwind the curly cable from the column.

1. Remove the batteries from the foot pedal and reinstall them. Try the anchor mode again to see if the trolling motor functions correctly.
2. If removing the batteries and reinstalling them did not correct the problem, substitute a known-good foot pedal and try the anchor mode again.
3. Perform the compass calibration to ensure that the trolling motor is calibrated correctly. Refer to **Compass Calibration**.
4. If the compass calibration did not correct the problem, replace the GPS modules. Refer to **Replacing the GPS Modules**.

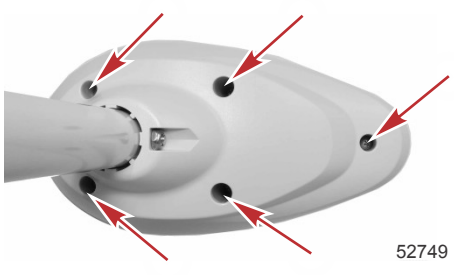
Replacing the GPS Modules

GPS Module Removal

⚠ WARNING

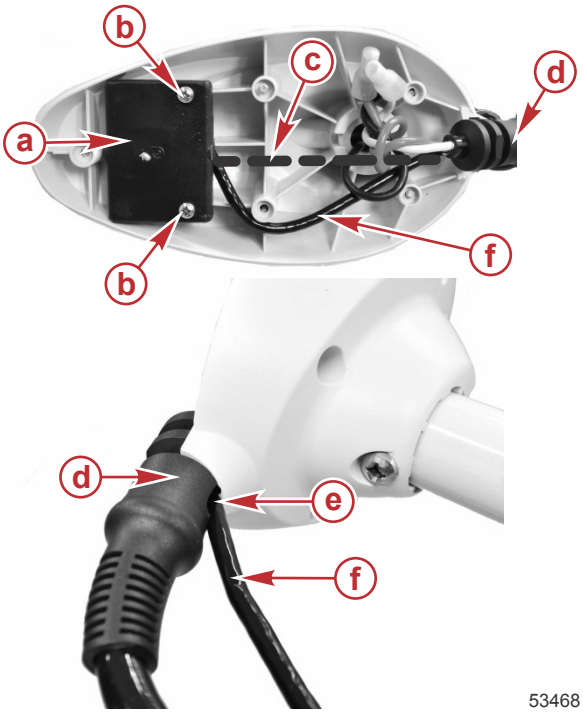
Before working around electrical system components, disconnect the battery cables from the battery to prevent injury or damage to the electrical system due to an accidental short circuit.

1. Starting with the negative (–) lead, disconnect the trolling motor battery cables from the battery, or unplug the trolling motor from its power source.
2. Remove the five screws from under the trolling motor head. Remove the cover from the trolling motor head.



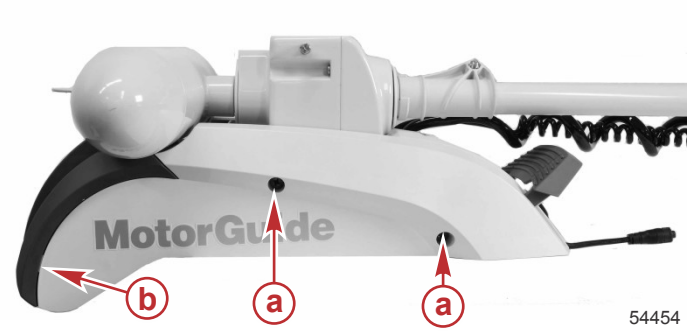
3. Remove the cable grommet from the trolling motor head.
4. Remove the two screws securing the upper GPS module to the trolling motor head.

5. Remove the upper GPS module and remove the GPS cable from under the cable grommet.



a - Upper GPS module
b - Mounting screws (2)
c - Incorrect GPS cable routing—do not install the cable here
d - Cable grommet
e - Sonar cable slot
f - GPS cable

6. Remove the side panel screws from each side of the trolling motor. Gently pull the side panels away from the mount, taking care not to damage the locating tabs, and remove the side panels from both sides of the trolling motor.

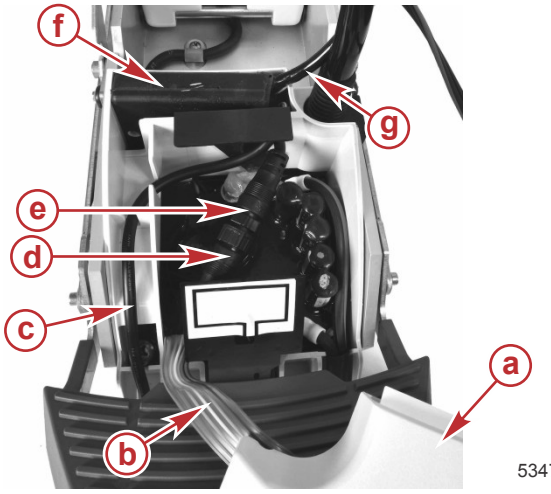


a - Side panel screws
b - Locating tab

7. Remove the status indicator light panel from the trolling motor by lifting it up, then rotating it to clear the foot release lever. Do not unplug the status indicator light panel from the trolling motor.

8. Disconnect the male and female GPS connectors.
9. Route the GPS cable and NMEA cable so they will not snag when removing the lower GPS module.

10. Remove the lower GPS module.



- **a -** Status indicator light panel
- **b -** Status light harness
- **c -** NMEA cable
- **d -** Female GPS connector
- **e -** Male GPS connector
- **f -** Lower GPS module
- **g -** GPS cable

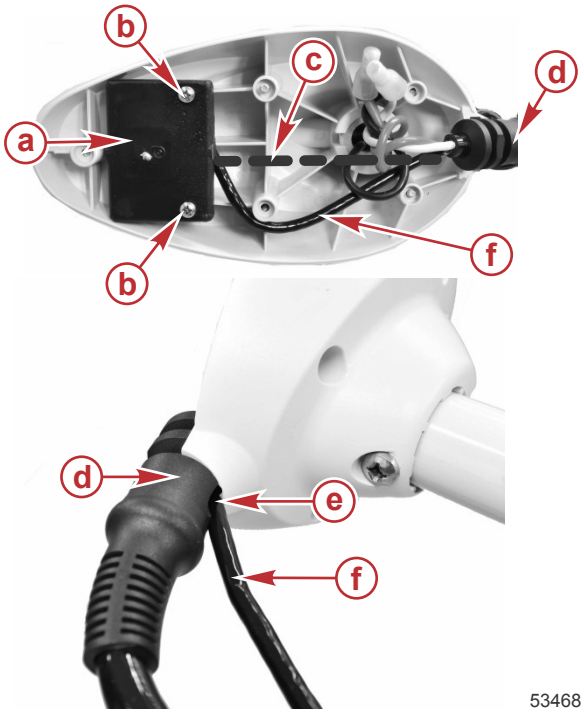
GPS Module Installation

⚠ 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.

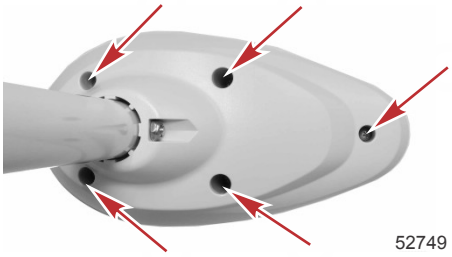
1. Ensure that the trolling motor is disconnected from the batteries or power source.
2. Place the upper GPS module into the trolling motor head as shown, with the GPS cable exiting the module from below. Secure the upper GPS module to the trolling motor with two mounting screws. Push the power wires to one side to ease installation of the GPS cable. Route the GPS cable out of the trolling motor head, through the slot in the cable grommet as shown.

   IMPORTANT: Do not overtighten the mounting screws or use power tools to tighten the screws.

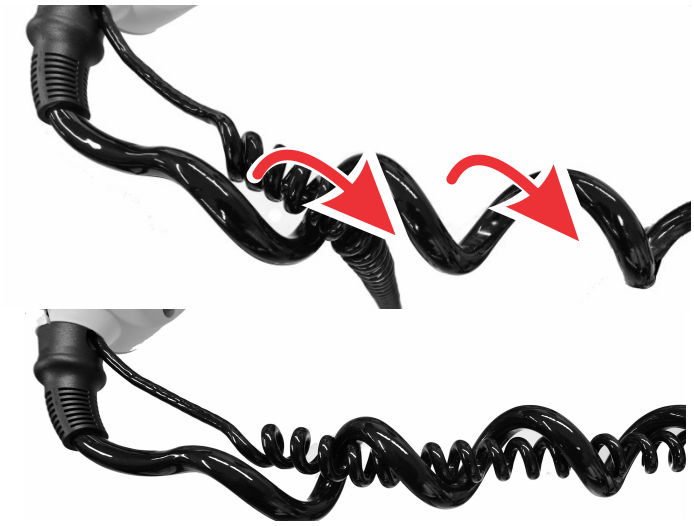


- **a -** Upper GPS module
- **b -** Mounting screws (2)
- **c -** Incorrect GPS cable routing—do not install the cable here
- **d -** Cable grommet
- **e -** Sonar cable slot
- **f -** GPS cable

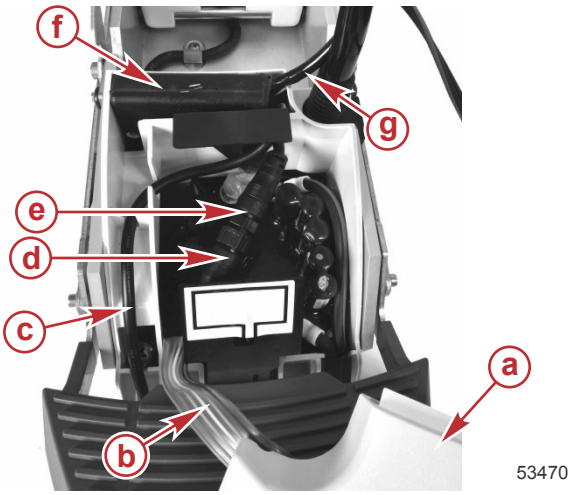
3. Place the cover onto the trolling motor head. Ensure that the cable grommet is seated in the trolling motor head and that no wires are pinched. Install the five screws that secure the cover to the trolling motor.



4. Extend the trolling motor column so that the coiled power cable is as long as possible. Starting from the trolling motor head, wrap the coiled GPS cable around each coil of the power cable until you reach the lower mount. This will place the coiled GPS cable inside the coils of the power cable.

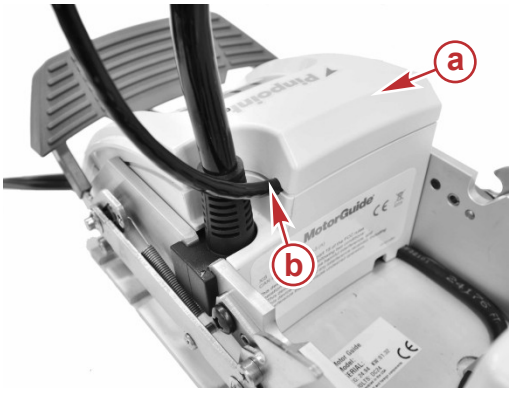


5. Install the lower GPS module into the emply slot in the trolling motor base. Route the NMEA cable as shown.
6. Connect the male and female GPS module connectors. Press the connectors together, then turn the nut 1/4 turn to the right until it locks.
7. Route the GPS cable through the opening in the trolling motor base.



a - Status indicator light panel
b - Status light harness
c - NMEA cable
d - Female GPS connector
e - Male GPS connector
f - Lower GPS module
g - GPS cable

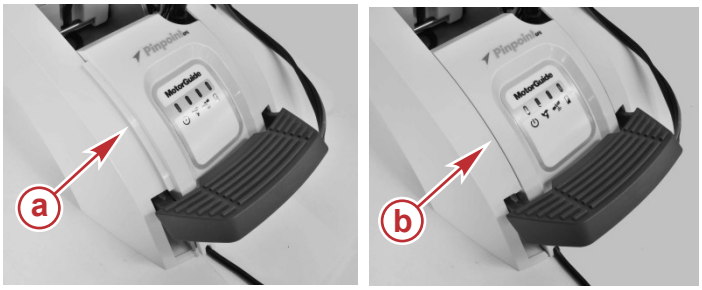
8. Install the status indicator light panel. Ensure that no wires are pinched, and that the GPS cable is positioned as shown.



54438

a - Status indicator light panel
b - GPS cable

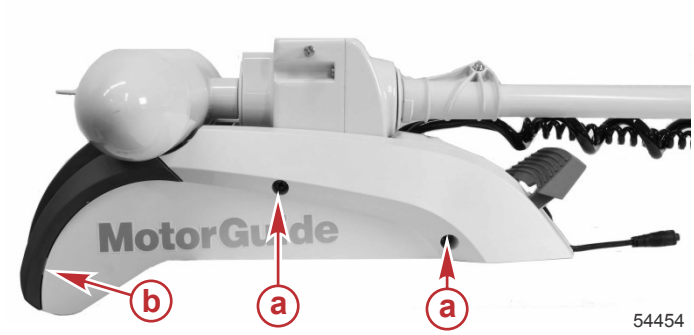
9. Install the side panels onto the trolling motor. Ensure that the status indicator light panel is seated between the side panels as shown, and that no wires are pinched.



54529

a - Status indicator light panel not seated—incorrect
b - Status indicator light panel seated correctly

10. Tighten the screws securing the side panels to the trolling motor.



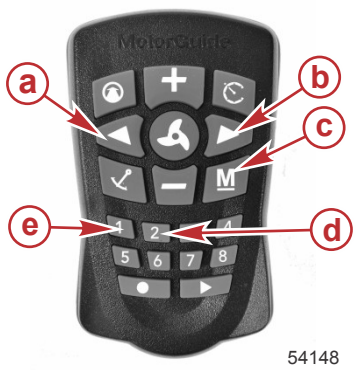
54454

a - Side panel screws (2)
b - Locating tab

Calibration

Mounting Angle Calibration

IMPORTANT: This calibration is required and is normally completed once when the GPS modules are installed. 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.



54148

a - Left turn
b - Right turn
c - Manual mode
d - #2 button
e - #1 button

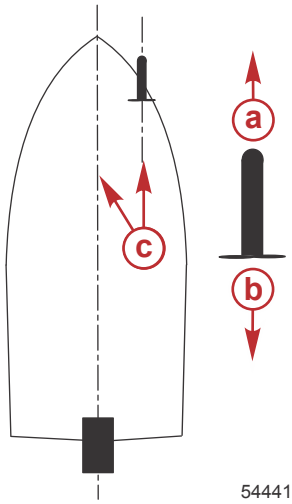
IMPORTANT: A fixed GPS position is required to complete the mounting angle calibration. The Xi5 will emit an audible tune once it has acquired a fixed GPS position (in the default audio mode), and the GPS status indicator light will illuminate.

1. Power up and deploy the trolling motor. Adjust the motor height so that the motor is clear of any obstructions while turning.
   IMPORTANT: Stay a safe distance away from the propeller—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.



54441

View of boat from above
- **a -** Nose cone facing the bow
- **b -** Propeller facing the stern
- **c -** Parallel lines

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 tune, flash the status indicator light, and then return to manual mode, completing the mounting angle calibration.

Compass Calibration

IMPORTANT: This calibration is completed at the factory. It should only be repeated if the Pinpoint GPS system is not responding properly. This calibration must be done with the boat in the water, using the primary propulsion engine.

IMPORTANT: A fixed GPS position is required to complete the compass calibration. The Xi5 will emit an audible tune once it has acquired a fixed GPS position (in the default audio mode), and the GPS status indicator light will illuminate.

53737

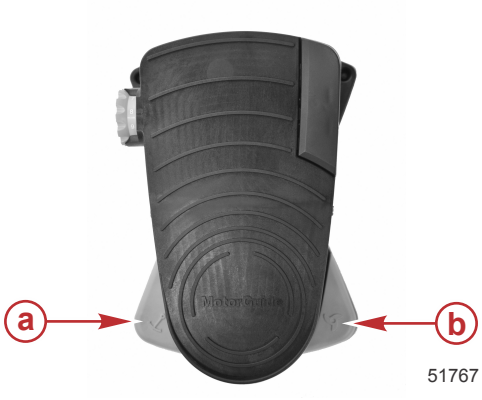
- **a -** Manual mode
- **b -** #1 button

1. Locate a suitable area clear of obstructions to navigation (both above and below the waterline) to perform the compass calibration.
2. Deploy the trolling motor. Verify that you are in a location where your 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 three ascending-tone beeps.
4. Use the primary propulsion engine to slowly drive the boat in two complete circles. The trolling motor will emit a tune when the compass calibration is complete.

Xi5 Recommended Final Testing

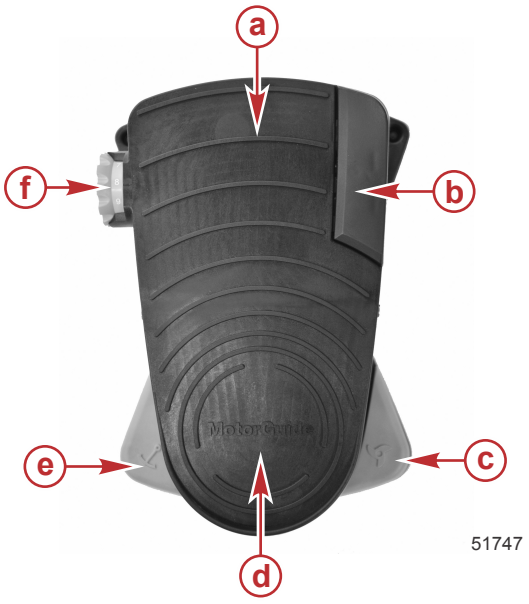
Perform the following tests after completing repairs to ensure proper operation of the Xi5 trolling motor.

1. Install a propeller onto the lower unit and place the trolling motor into a test tank. Refer to **Section 3C - Propeller Replacement**.
2. Ensure that the power supply is set to the proper voltage for the model being tested:
   - 12.3–12.5 volts for 12-volt models
   - 24.3–24.5 volts for 24-volt models
   - 35.0–36.0 volts for 36-volt models
3. Mount the motor on the test tank fixture and connect it to the power supply.
4. Within ten seconds of connecting the power supply to the trolling motor, press and hold the **propeller** and **anchor** buttons on the foot pedal simultaneously.



a - **Anchor** button (foot pedal on/off)
b - **Propeller** button (propeller on/off)

5. Listen for a multitone beep, indicating that the receiver has synced the electronic serial number.
6. Press the **propeller** button on the foot pedal to activate the trolling motor. The propeller should start turning at a slow speed.
7. Reduce the motor speed with the speed control dial as necessary to determine that the propeller is turning counterclockwise (normal rotation).
8. Increase the motor speed using the speed control dial on the foot pedal until at full speed. Because power supplies and test tanks vary, verify that the current draw is within 38–50 amps.



a - Toe-down position—right turn
b - Propeller momentary on/off
c - Propeller constant on/off
d - Heel-down position—left turn
e - Anchor button—foot pedal on/off; also anchor mode (models with GPS installed)
f - Speed control dial

9. Reduce the speed to approximately half-speed using the speed control dial. Steer the motor one complete revolution to the left. Verify that the trolling motor:
   - ☐ Steers left
   - ☐ Steers smoothly with no jerking

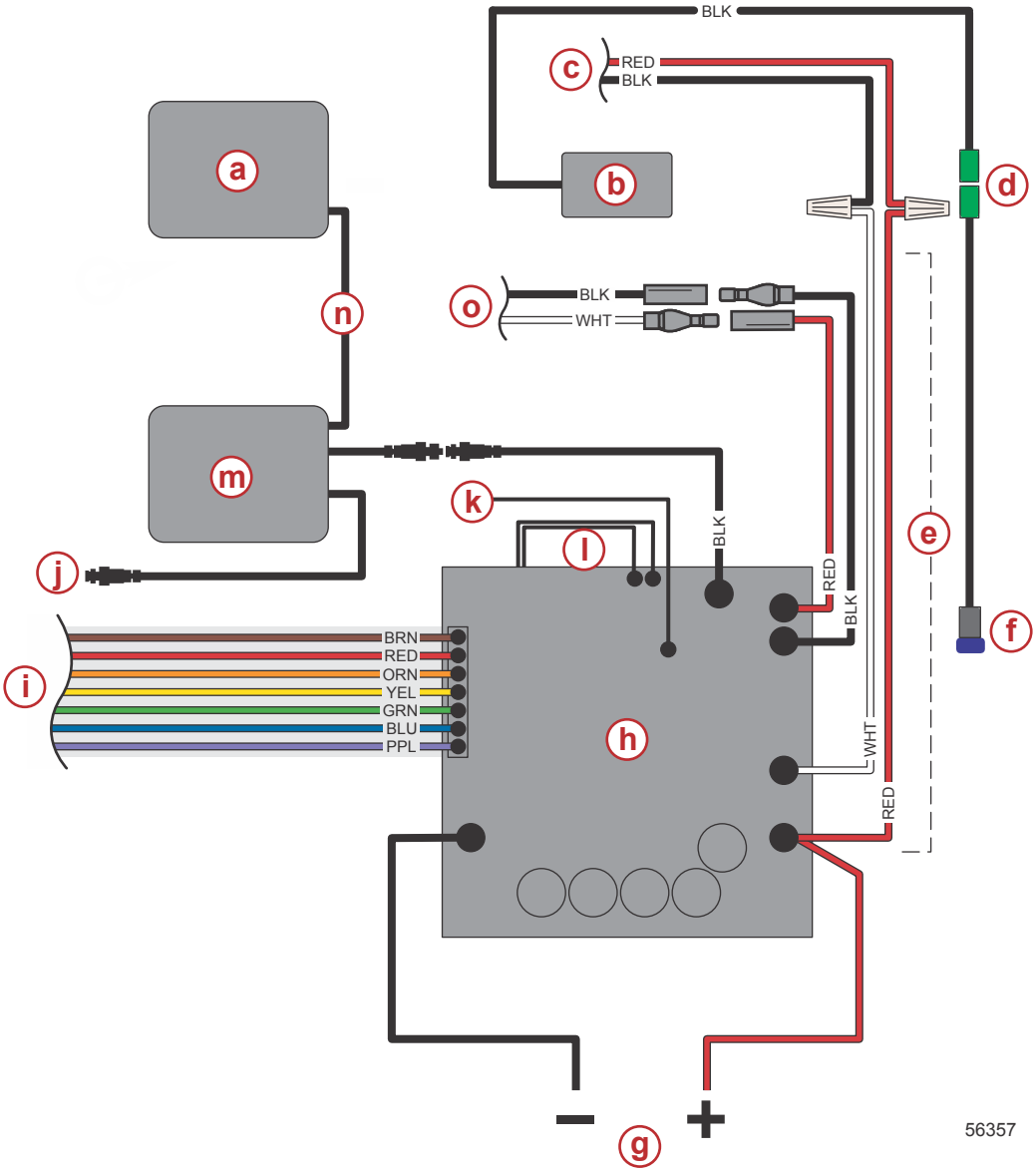
- ☐ Makes no unusual noises
- ☐ Remains locked in the deployed position while the motor is turning

10. Steer the motor one complete revolution to the right. Verify that the trolling motor:
    - ☐ Steers right
    - ☐ Steers smoothly with no jerking
    - ☐ Makes no unusual noises
    - ☐ Remains locked in the deployed position while the motor is turning
11. Cycle the propeller on/off using the propeller momentary on/off button to test the momentary button.
12. Stop the trolling motor.
13. Turn off the power supply, disconnect the battery cables, and remove the motor from the test tank.

Wire Color Code Abbreviations

Wire Color Abbreviations				
BLK	Black		BLU	Blue
BRN	Brown		GRY	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

Xi5 Wiring Diagram (With Pinpoint GPS and Sonar)



- **a -** Upper GPS module (Pinpoint GPS models only)
- **b -** Sonar nose cone (sonar-equipped models only)
- **c -** Lower unit
- **d -** Sonar connector in top housing (sonar-equipped models only)
- **e -** Large curly cable
- **f -** Lowrance 7-pin connector (sonar-equipped models only)
- **g -** Battery
- **h -** Wireless controller board
- **i -** Status indicator light panel
- **j -** NMEA 2K connector (Pinpoint GPS models only)
- **k -** GPS antenna
- **l -** Reed switch
- **m -** Lower GPS module
- **n -** Small curly cable
- **o -** Steering transmission

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Fax	English +1 920 929 5893 Français +1 905 636 1704	
Website	www.mercurymarine.com	

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Telephone	+61 3 9791 5822	Brunswick Asia Pacific Group 41–71 Bessemer Drive Dandenong South, Victoria 3175 Australia
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Telephone	+65 65466160	Brunswick Asia Pacific Group T/A Mercury Marine Singapore Pte Ltd 29 Loyang Drive Singapore, 508944
Fax	+65 65467789	

Notes:

Trolling Motor Assembly

Section 3A - Trolling Motor Parts Identification, Service Kits, and Torque Specifications

Table of Contents

Torque Specifications

Top Housing

Description	Nm	lb-in.	lb-ft
Head cover base screw (1/4-20 x 2 in. Phillips pan head)	3.9	35	–
Head cover screws (#8 x 0.625 in. Phillips pan head)	1.5	13.5	–

Mount and Transmission Assembly

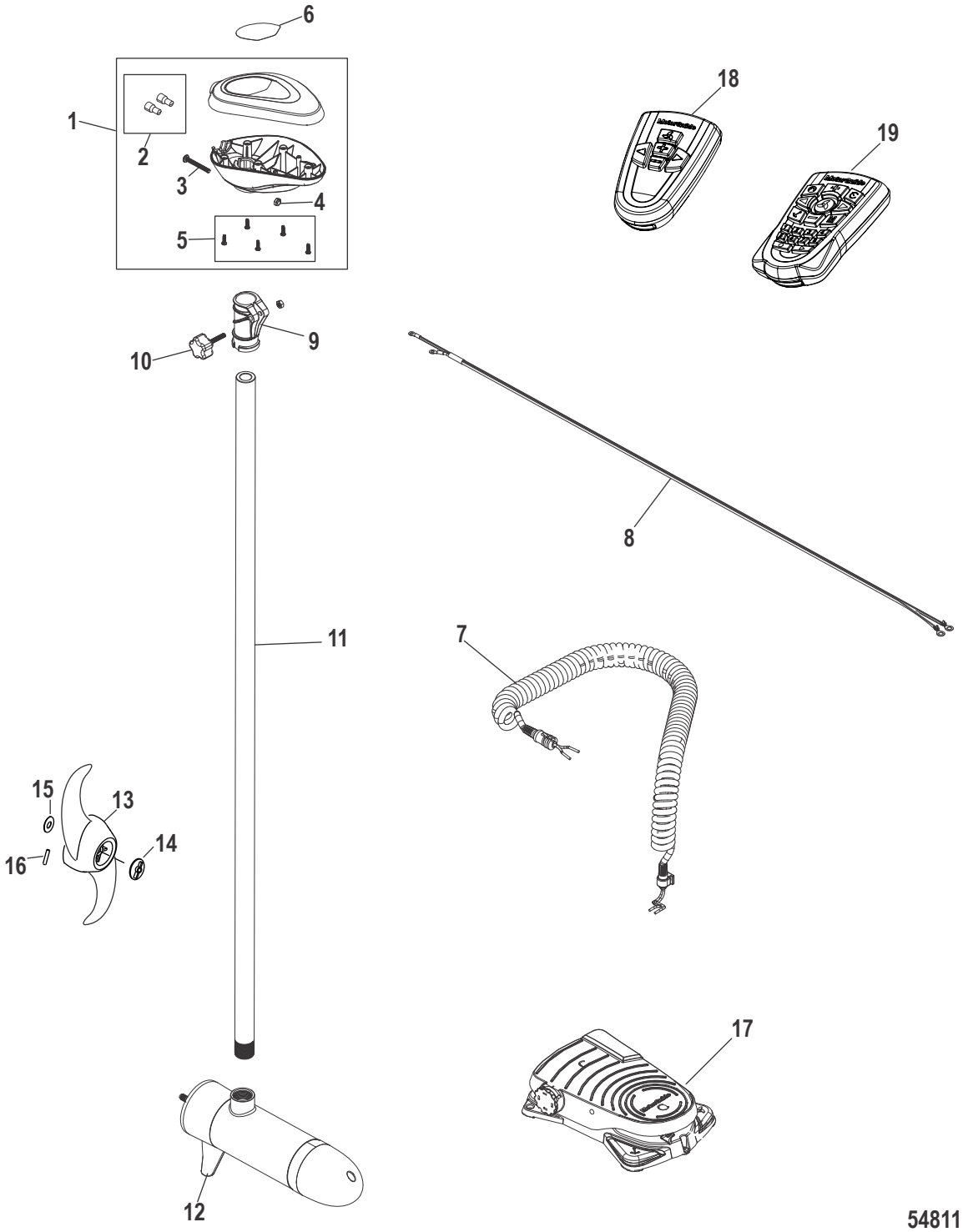
Description	Nm	lb-in.	lb-ft
Mount side cover screws (1/4 x 0.50 in. stainless steel)	5.1	45	–
Controller board lead wire screws (1/4-28 x 0.375 in. stainless steel)	2.2	20	–
Controller board-to-base screws (1/4-20 x 1.00 in. stainless steel)	5.1	45	–
Locking cradle screws (1/4 x 0.50 in. stainless steel)	5.1	45	–
Locking cradle center screw (1/4 x 0.50 in. stainless steel)	2.4	21	–
Gear case screws (6-32 x 0.31 in.)	0.6	5	–
Transmission assembly screws (10-32 x 0.75 in.)	3.4	30	–

Lower Unit

Description	Nm	lb-in.	lb-ft
Through bolts (5/16 in. hex head)	5.1	45	–
Nose cone screws (#10-10 x 1-1/2 in. Torx Plus® pan head)	3.1	27.5	–
Brush card screws (#10-32 x 0.74 in. Phillips pan head)	3.9	35	–
Motor lead and shunt screws (#8-32 Phillips pan head)	1.9	17.5	–
Column-to-lower unit (column threads)	47.5	–	35

Notes:

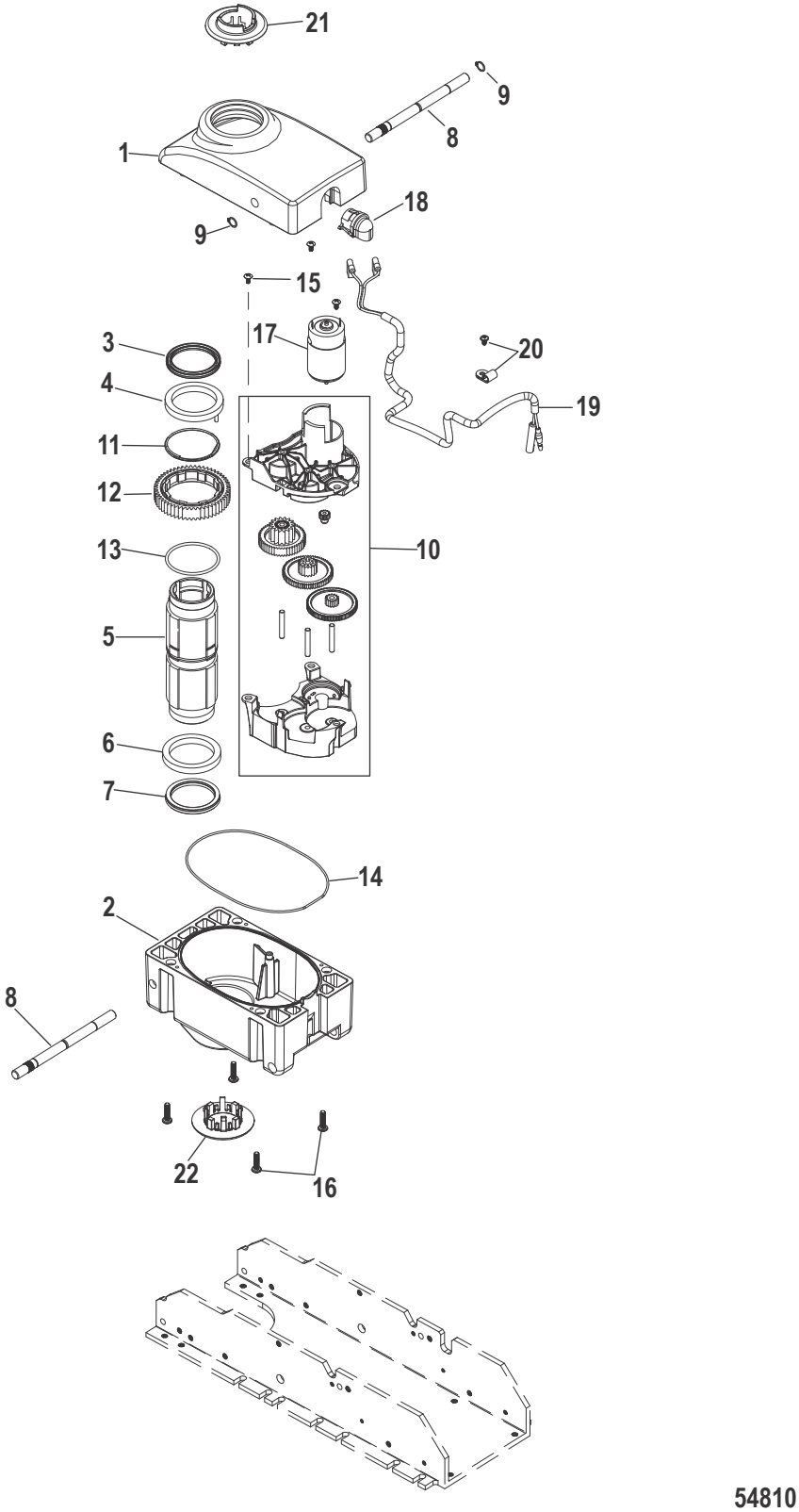
Trolling Motor Assembly



Trolling Motor Assembly

Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Head assembly (freshwater)			
		Head assembly (saltwater)			
2	2	Pigtail connector			
3	1	Screw	3.9	35	–
4	1	Locknut			
5	1	Screw set	1.5	13.5	–
6	1	Decal set (freshwater)			
		Decal set (saltwater)			
7	1	Curly cable			
8	1	Battery cable			
9	1	Depth collar assembly			
10	1	Knob			
11	1	Column, 45 in. (freshwater)			
		Column, 48 in. (freshwater)			
		Column, 54 in. (freshwater)			
		Column, 60 in. (freshwater)			
		Column, 45 in. (saltwater)			
		Column, 48 in. (saltwater)			
		Column, 54 in. (saltwater)			
		Column, 60 in. (saltwater)			
12	1	Lower unit assembly (freshwater)			
		Lower unit assembly (saltwater)			
13	1	Propeller			
14	1	Propeller nut			
15	1	Aluminum anode			
16	1	Propeller drive pin (0.156 in. x 1.00 in.)			
17	1	Wireless foot pedal			
18	1	Wireless handheld remote			
19	1	Wireless handheld remote (Pinpoint GPS)			

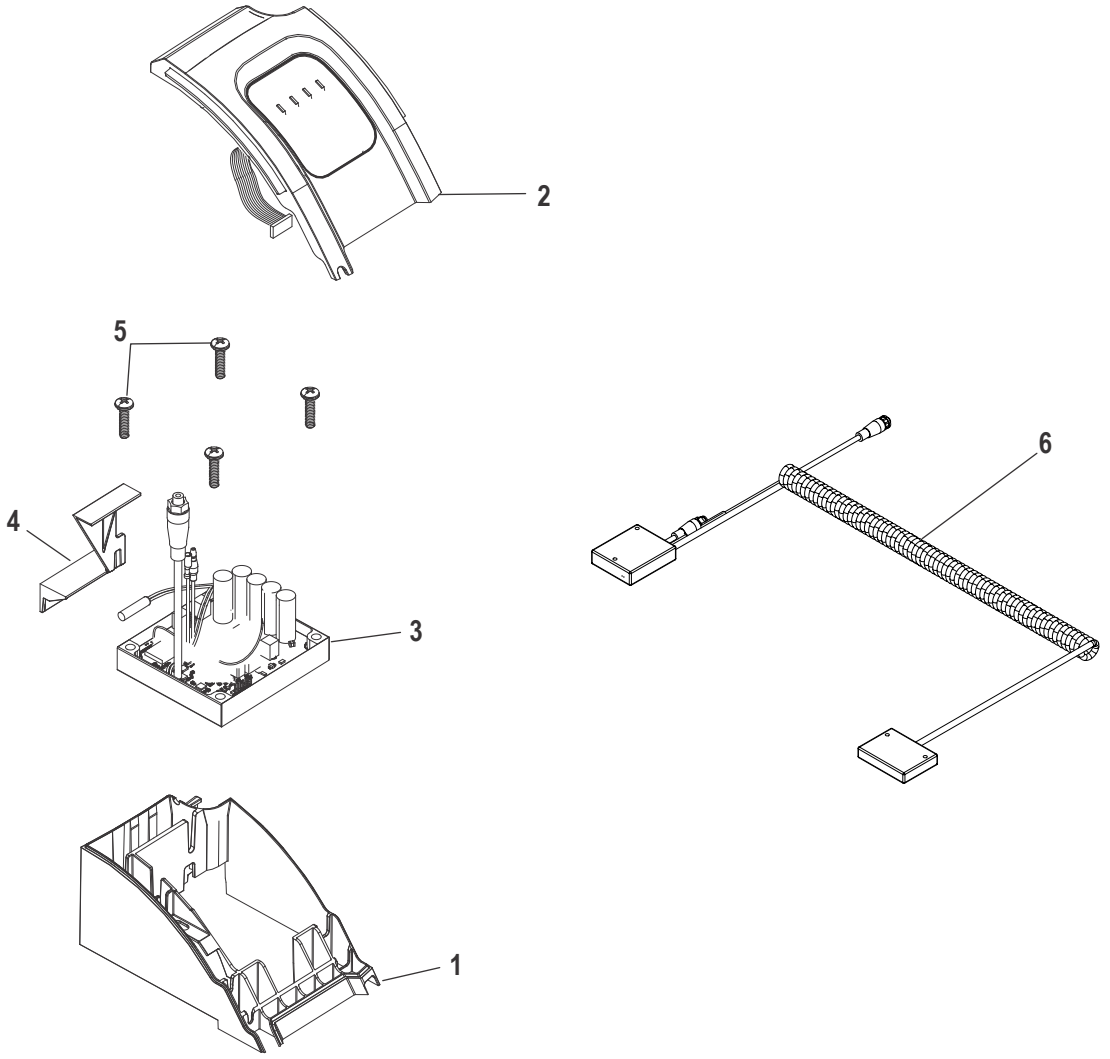
Steering Transmission



Steering Transmission

Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Transmission cover assembly			
2	1	Transmission base			
3	1	Seal			
4	1	Spacer			
5	1	Steering tube			
6	1	Spacer			
7	1	Seal			
8	2	Pivot pin			
9	2	Clip			
10	1	Gear set			
11	1	O-ring			
12	1	Gear			
13	1	O-ring			
14	1	Seal			
15	3	Screw (6-32 x 0.31 in.)	0.6	5	–
16	4	Screw (10-32 x 0.75 in.)	3.4	30	–
17	1	Motor assembly			
18	1	Grommet			
19	1	Wire assembly			
20	1	Cable clamp kit			
21	1	Column cap kit			
22	1	Lower column cap			

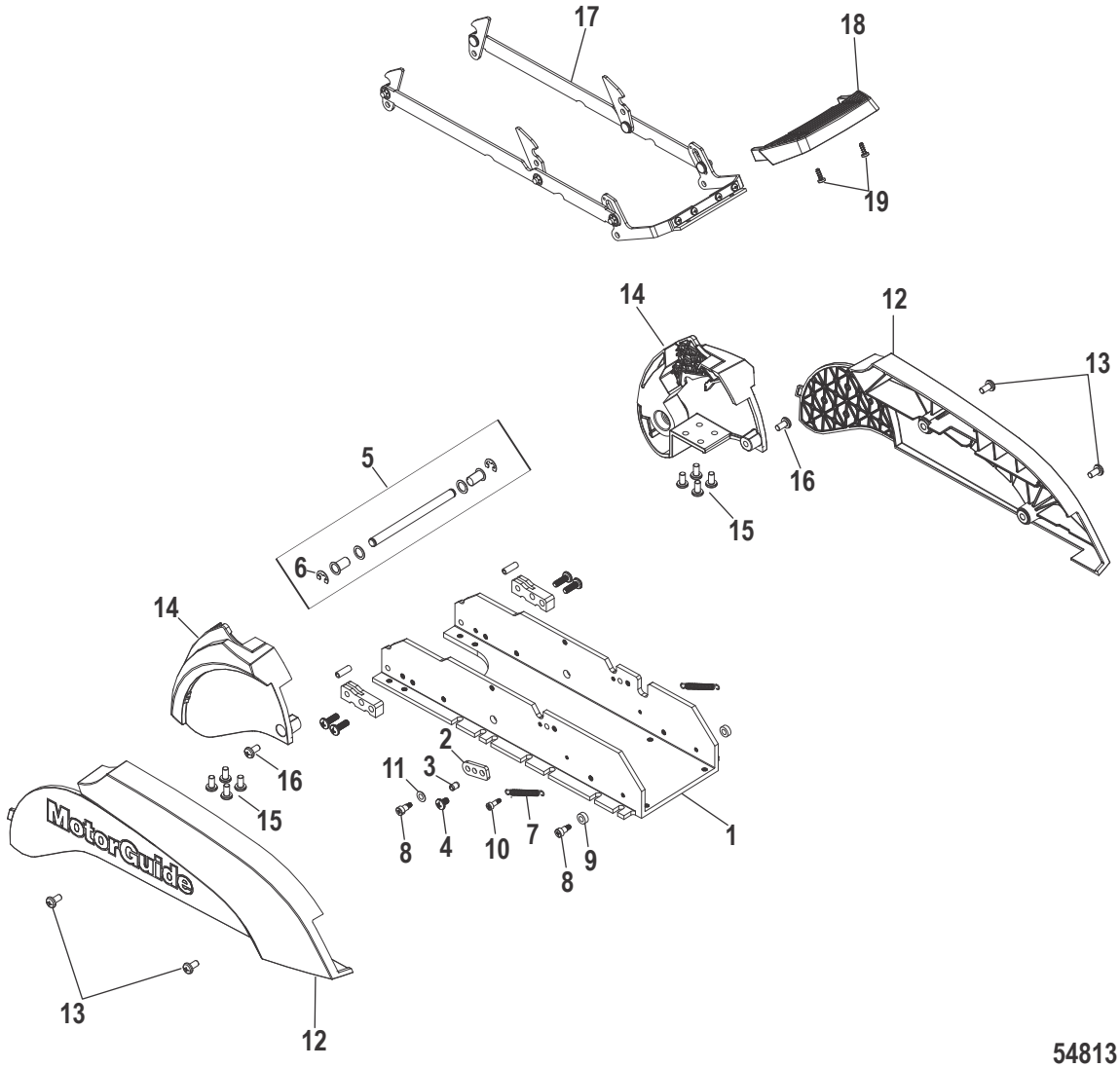
Control Board



Control Board

Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Control board housing (freshwater)			
		Control board housing (saltwater)			
2	1	Cover assembly (freshwater)			
		Cover assembly (saltwater)			
3	1	Control board (12 V)			
		Control board (24 V)			
		Control board (36 V)			
4	1	Retainer			
5	4	Screw	5.1	45	–
6	1	GPS module (Pinpoint GPS models only)			

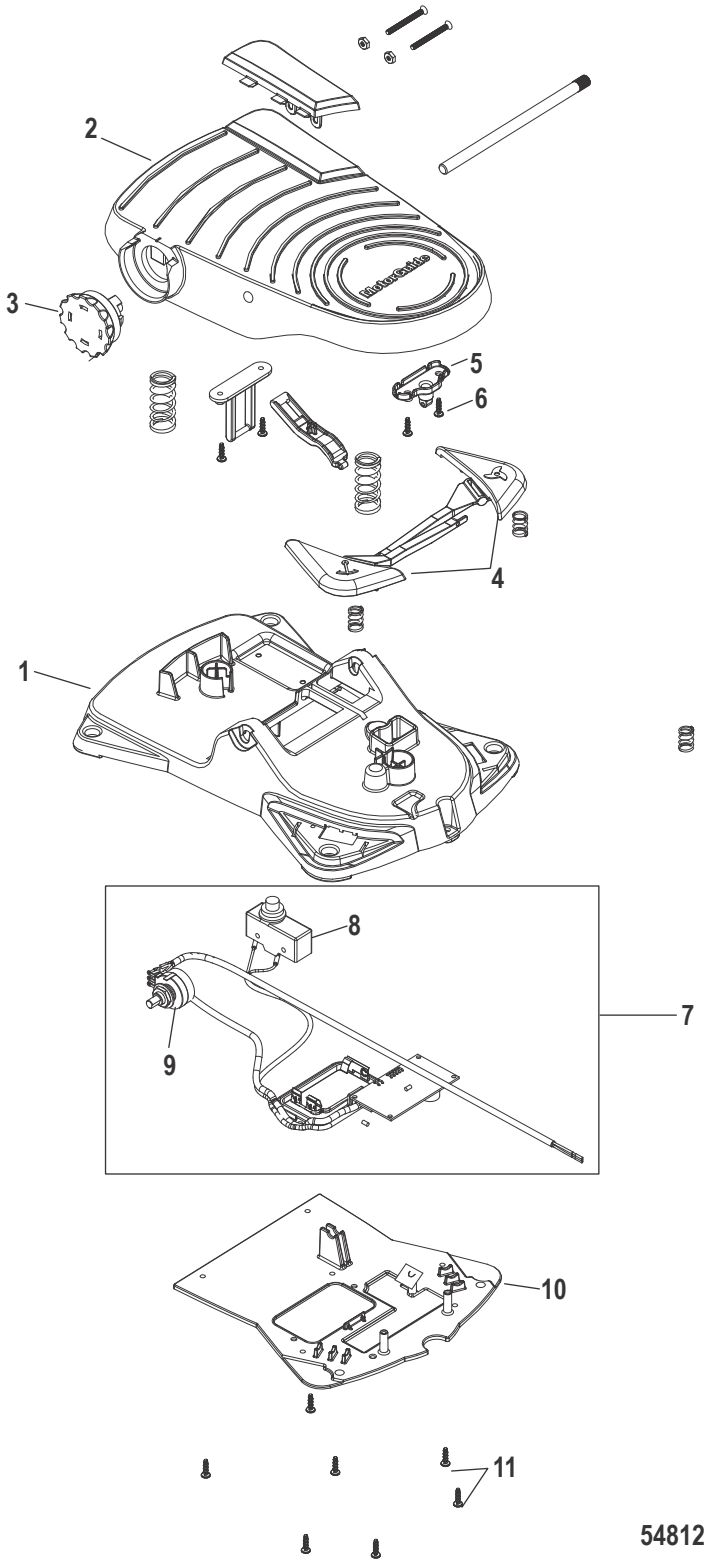
Bow Mount



Bow Mount

Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Mount extrusion kit			
2	2	Plate			
3	2	Pin			
4	2	Screw			
5	1	Transmission tilt pin kit			
6	1	Clip kit			
7	1	Spring set			
8	4	Screw	5.1	45	–
9	2	Spacer			
10	2	Screw	2.4	21	–
11	4	Washer			
12	1	Side decket kit (freshwater)			
		Side decket kit (saltwater)			
13	4	Screw (1/4-20 x 0.50 in.)	5.1	45	–
14	1	Decket kit			
15	8	Screw (1/4-20 x 0.50 in.)	5.1	45	–
16	2	Screw (1/4-20 x 0.50 in.)	5.1	45	–
17	1	Stow lock linkage kit			
18	1	Pedal			
19	2	Screw			

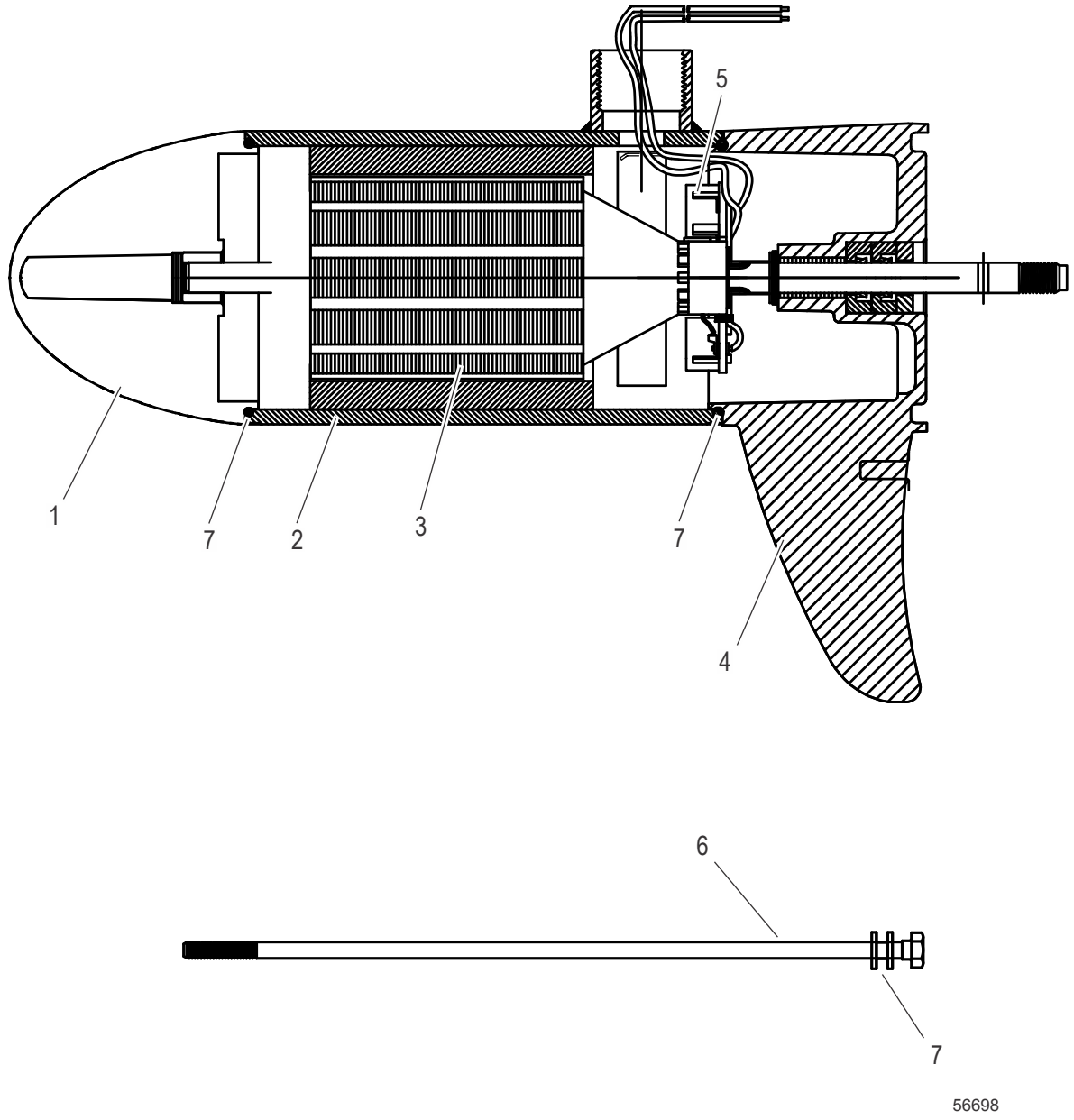
Foot Pedal



Foot Pedal

Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Base			
2	1	Pedal tread			
3	1	Knob			
4	1	Button			
5	1	Bezel kit			
6	2	Screw			
7	3	Harness assembly			
8	1	Microswitch assembly			
9	1	Potentiometer assembly			
10	1	Bottom cover			
11	7	Screw			

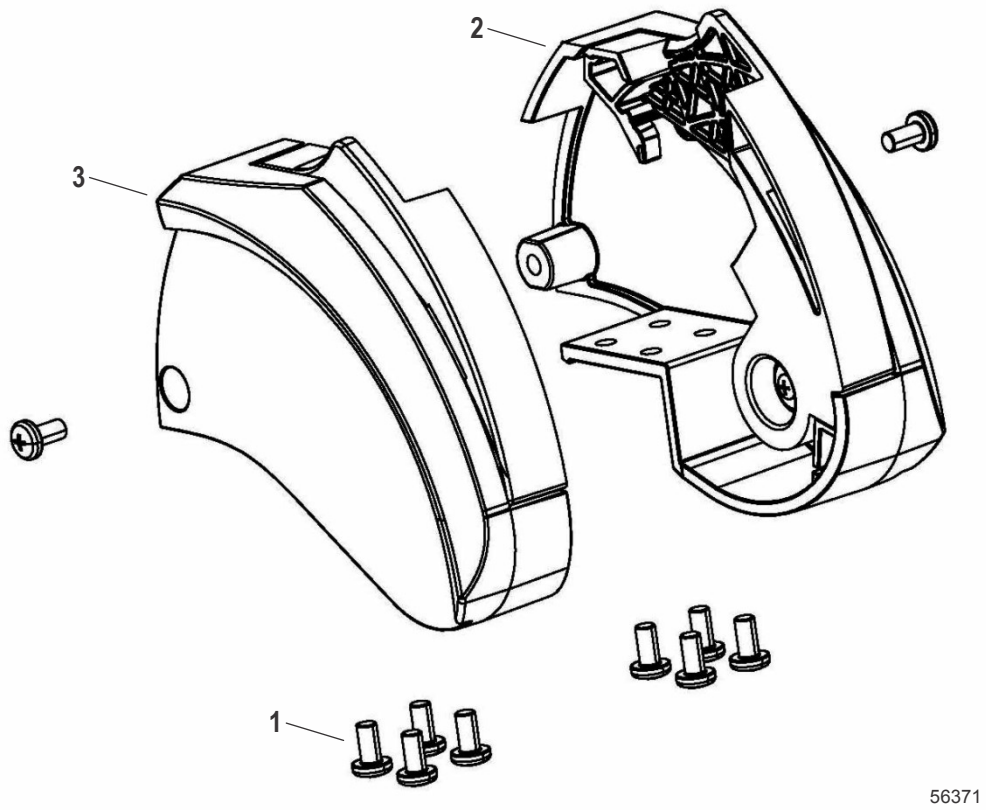
Lower Unit Assembly



Lower Unit Assembly

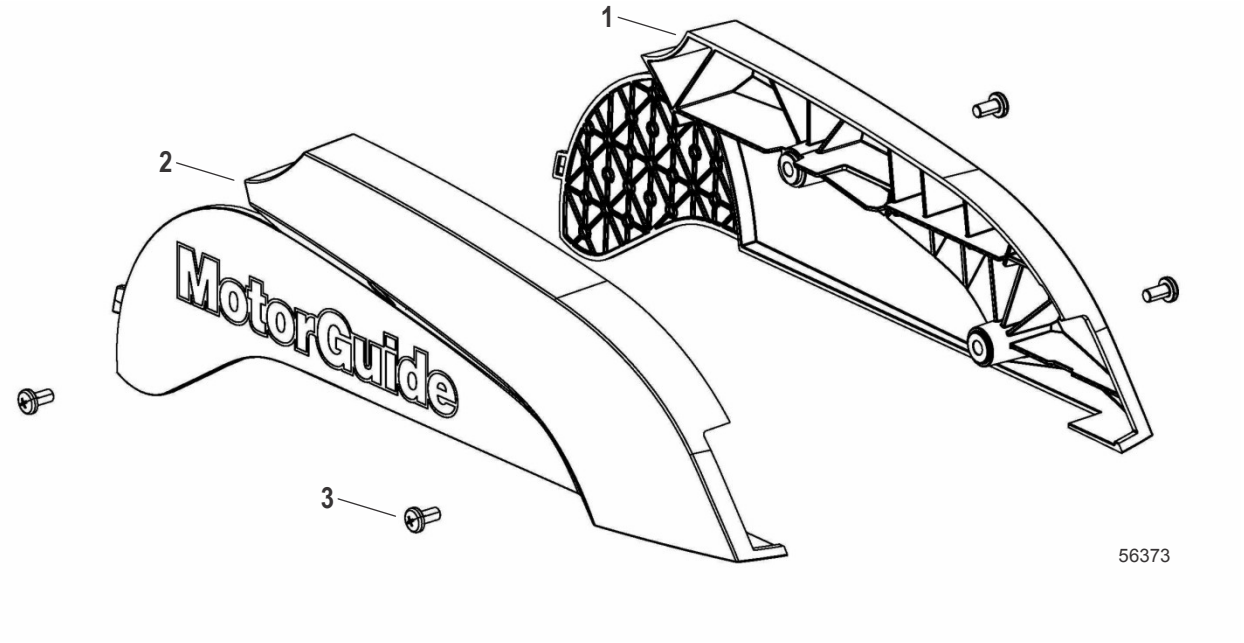
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Nose cone assembly (with bushing and thrust washer) (freshwater)			
		Nose cone assembly (with bushing and thrust washer) (saltwater)			
2	1	Housing assembly (with magnet and wire retainer) (freshwater)			
		Housing assembly (with magnet and wire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

Decket Service Kit



Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	10	Screw (1/4-20 x 0.50 in.) stainless steel	5.1	45	–
2	1	Left-side decket			
3	1	Right-side decket			

Side Panel Service Kits



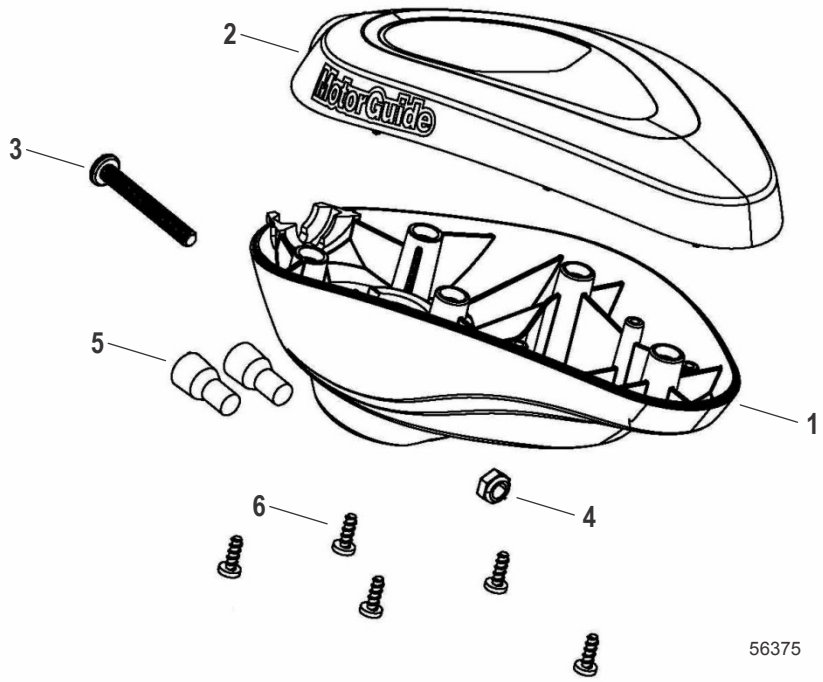
Freshwater Kit

Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Starboard panel cover (black)			
2	1	Port panel cover (black)			
3	4	Screw (1/4-20 x 0.50 in.) stainless steel	5.1	45	–

Saltwater Kit

Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Starboard panel cover (white)			
2	1	Port panel cover (white)			
3	4	Screw (1/4-20 x 0.50 in.) stainless steel	5.1	45	–

Head Assembly Service Kits



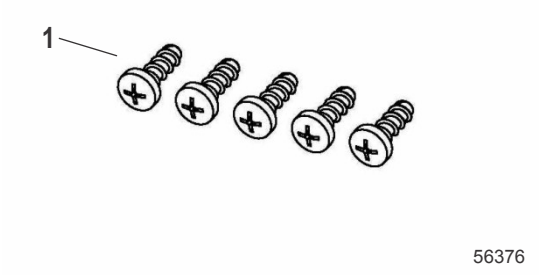
Freshwater Kit

Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Base (black)			
2	1	Head cover (black)			
3	1	Screw (1/4-20 x 2.0 in.) stainless steel	3.9	35	–
4	1	Nylock nut			–
5	2	Insulated pigtail connector			
6	5	Stainless steel screw (self-tapping)	1.5	13.5	–

Saltwater Kit

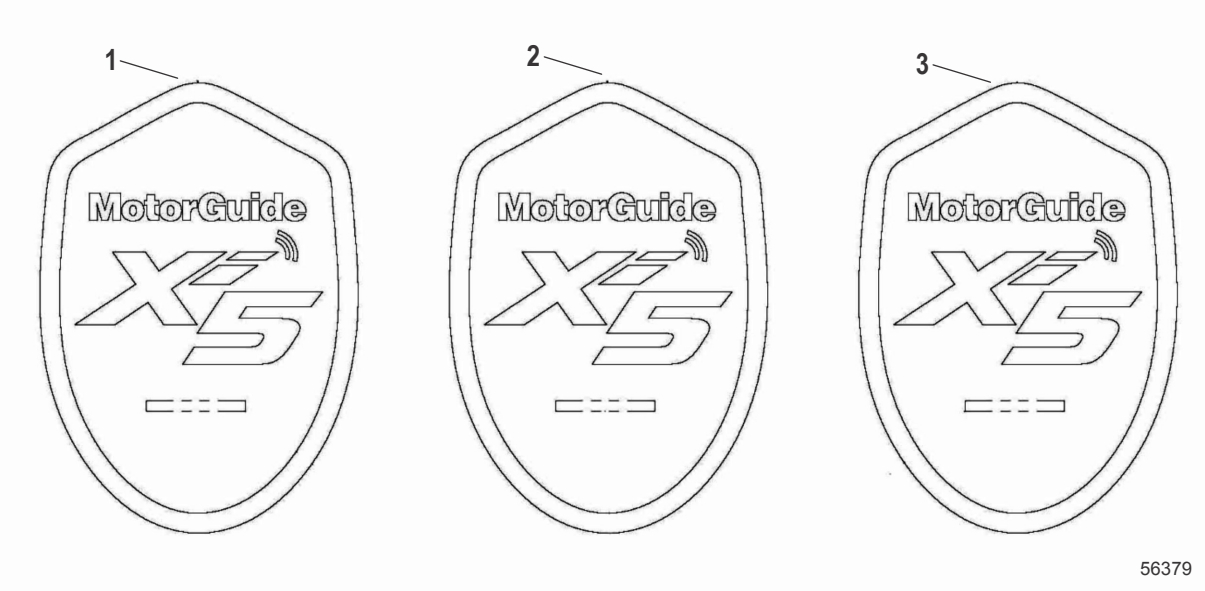
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Base (white)			
2	1	Head cover (white)			
3	1	Screw (1/4-20 x 2.0 in.) stainless steel	3.9	35	–
4	1	Nylock nut			–
5	2	Insulated pigtail connector			
6	5	Stainless steel screw (self-tapping)	1.5	13.5	–

Head Cover Screw Kit



Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	5	Stainless steel screw (self-tapping)	1.5	13.5	–

Head Decal Kits



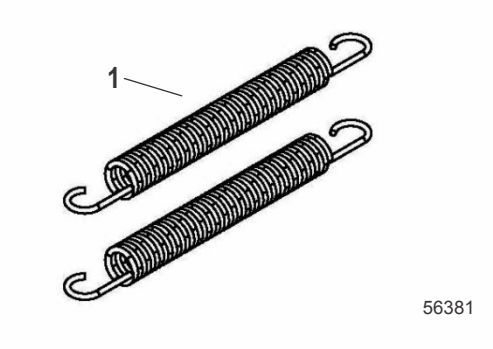
Freshwater Kit

Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Head decal, 12 V			
2	1	Head decal, 24 V			
3	1	Head decal, 36 V			

Saltwater Kit

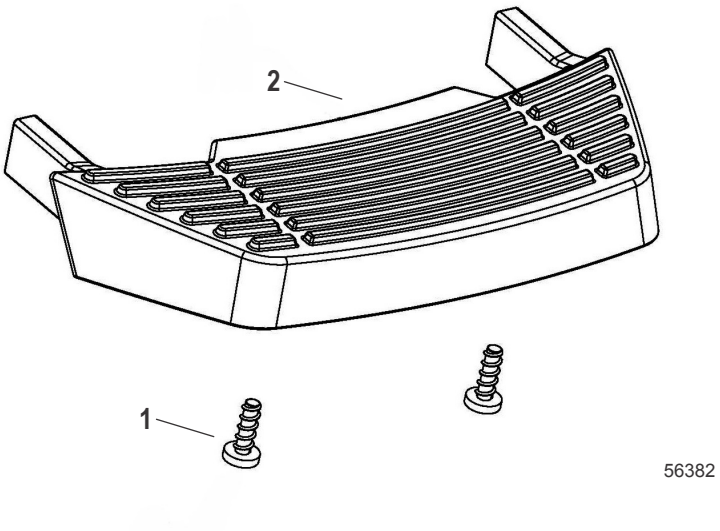
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Head decal, 12 V			
2	1	Head decal, 24 V			
3	1	Head decal, 36 V			

Stow/Deploy Spring Kit



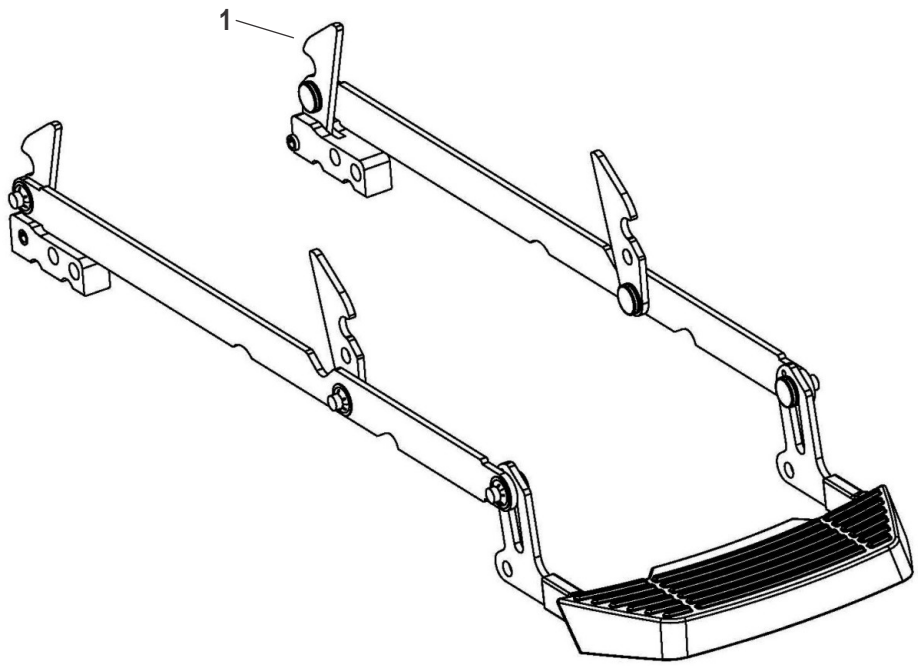
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	2	Stainless steel spring			

Stow/Deploy Pedal Kit



Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	2	Stainless steel screw (self-tapping)			
2	1	Stow/deploy pedal			

Pedal Linkage Kit



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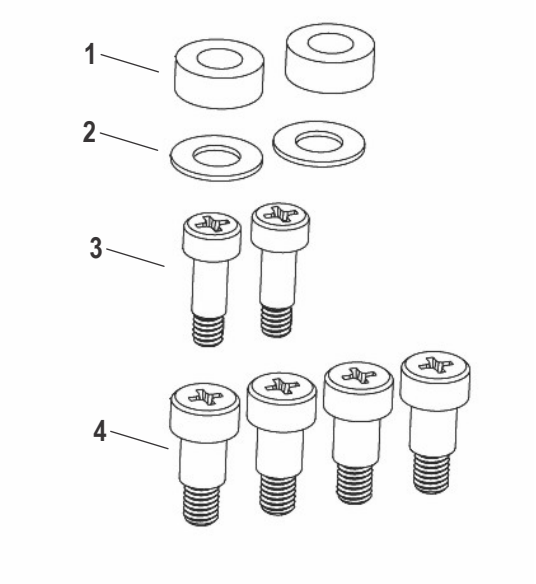
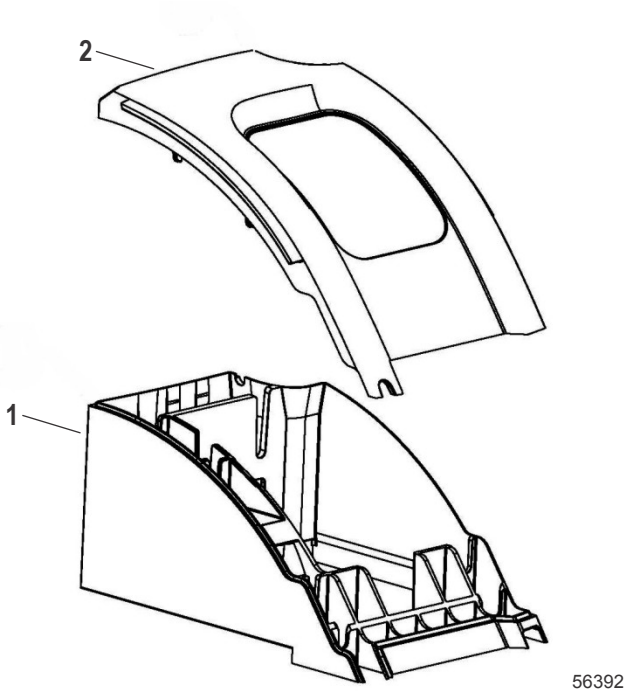
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Pedal linkage			

Linkage Hardware Kit



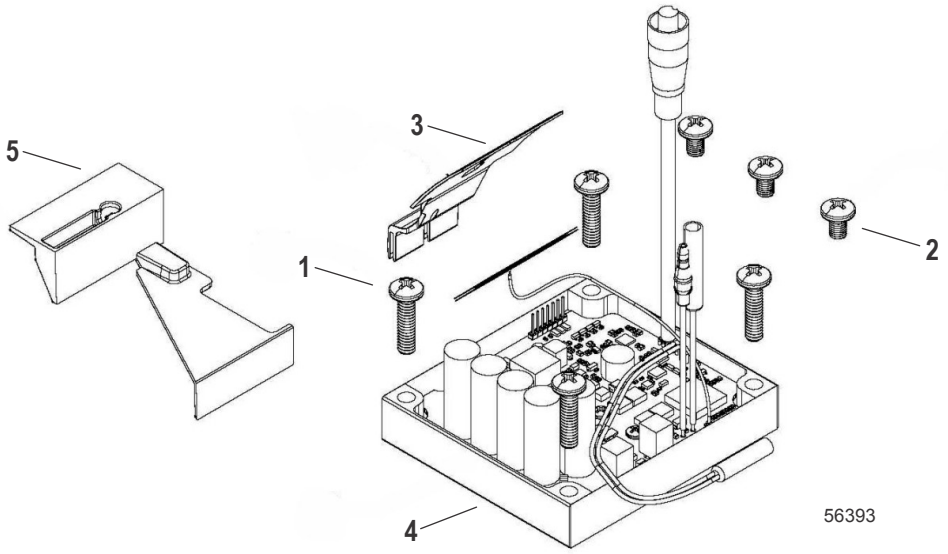
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	2	Plastic spacer			–
2	2	Plastic washer			
3	2	Stainless steel shoulder screw (8-32 x 0.1875 in.)	2.4	21	–
4	4	Stainless steel shoulder screw (10-32 x 0.25 in.)	5.1	45	–

Board Cover and LED Status Indicator Kits



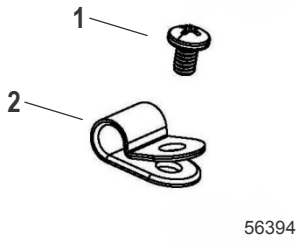
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Board cover (freshwater)			
		Board cover (saltwater)			
2	1	LED status panel (freshwater)			
		LED status panel (saltwater)			

Control Board Kit



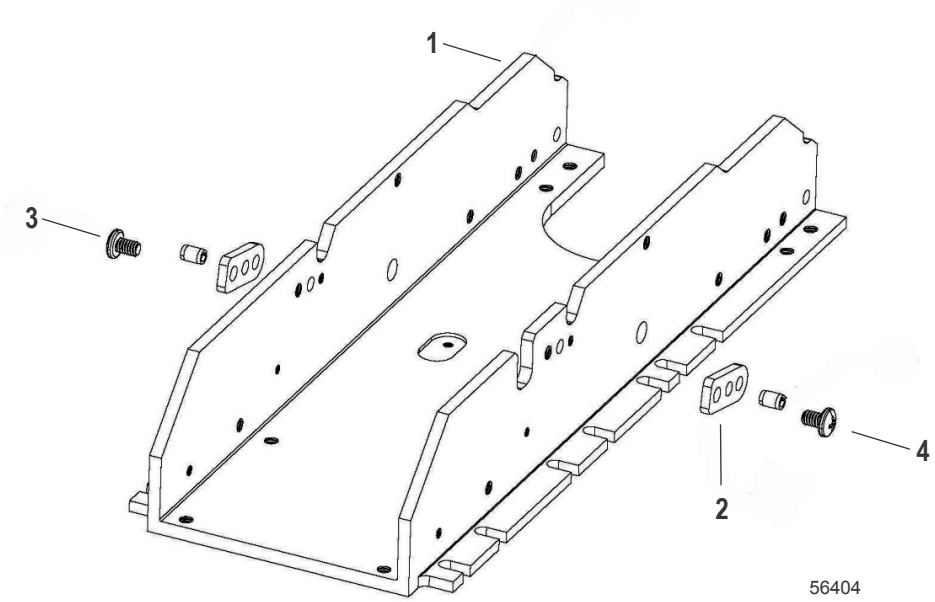
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	4	Screw (1/4-20 x 1.00 in.)	5.1	45	–
2	3	Screw (1/4-28 x 0.375 in.)	2.2	20	–
3	1	Antenna mount			
4	1	Controller assembly			
5	1	Reed switch retainer			

Cable Clamp Kit



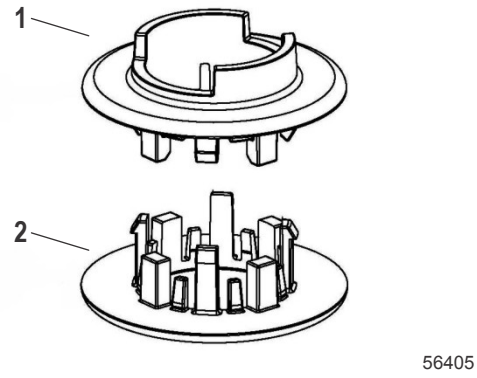
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Stainless steel screw (8-32 x 0.25 in.)			
2	1	Cable clamp			

Mount Base Kit



Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Mount base extrusion			
2	2	Reinforcing plate			
3	2	Stainless steel screw (1/4-20 x 0.375 in.)	5.1	45	–
4	2	Spring pin			

Column Cap Service Kits



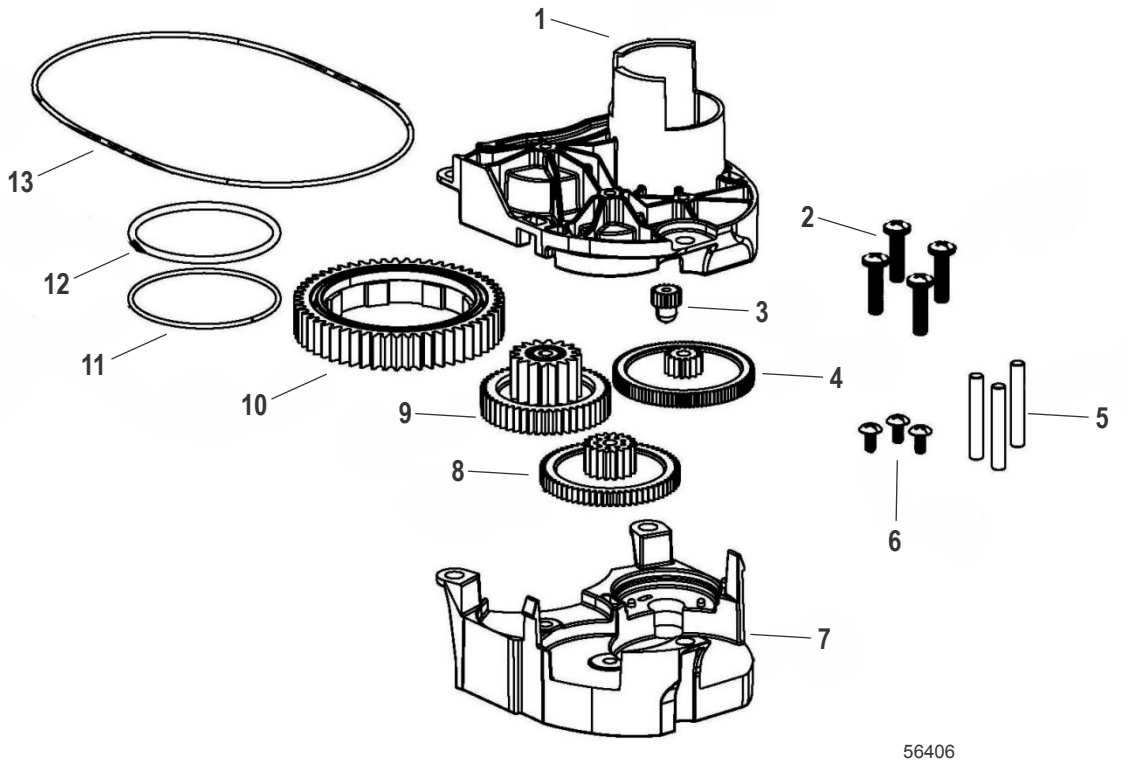
Freshwater Kit

Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Top column cap (black)			
2	1	Bottom column cap (black)			

Saltwater Kit

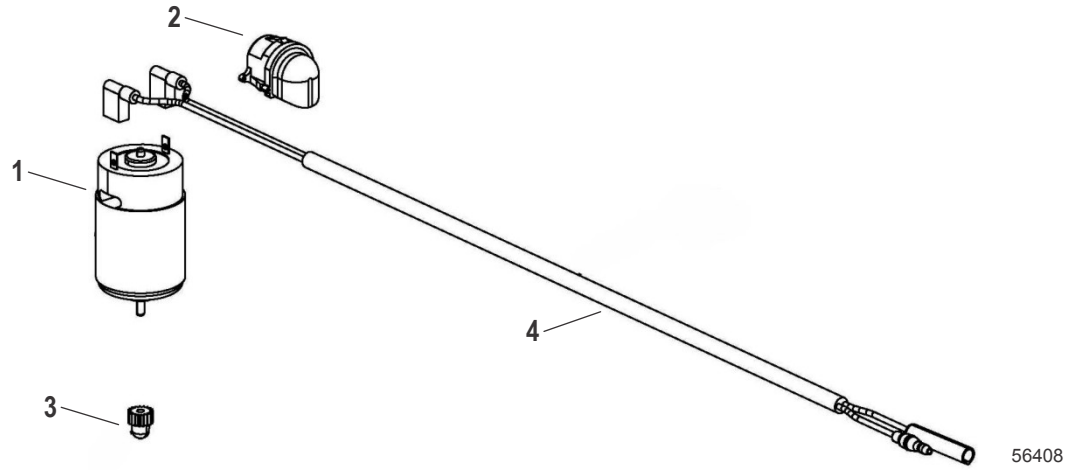
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Top column cap (white)			
2	1	Bottom column cap (white)			

Steering Transmission Service Kit



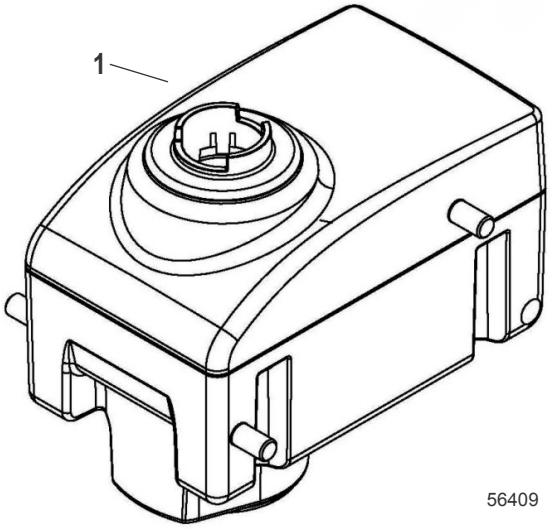
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Upper gearcase			
2	4	Screw (10-32 x 0.75 in.)	3.4	30	–
3	1	Gear 1			
4	1	Gear 2			
5	3	Dowel pin			
6	3	Screw (6-32 x 0.31 in.)	0.6	5	–
7	1	Lower gearcase			
8	1	Gear 3			
9	1	Gear 4			
10	1	Gear 5			
11	1	Retaining ring			
12	1	O-ring			
13	1	O-ring			

Steering Motor Service Kit



Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Steering motor			
2	1	Cable grommet			
3	1	Gear 1			
4	1	Cable assembly			

Transmission Assembly Kits



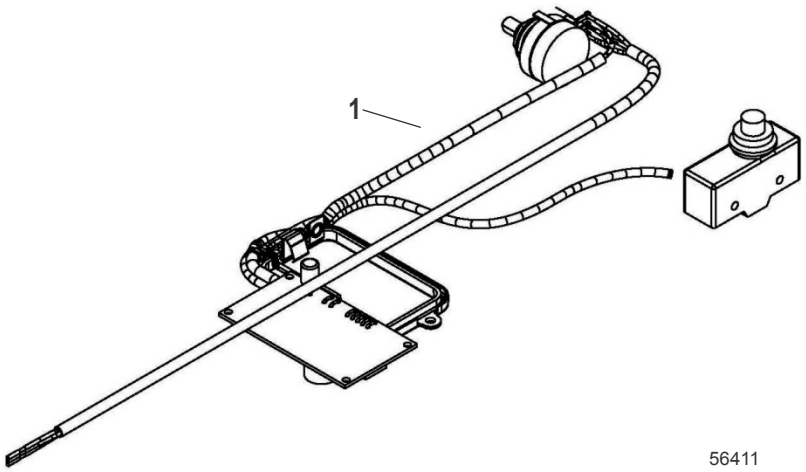
Freshwater Kit

Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Transmission assembly (black)			

Saltwater Kit

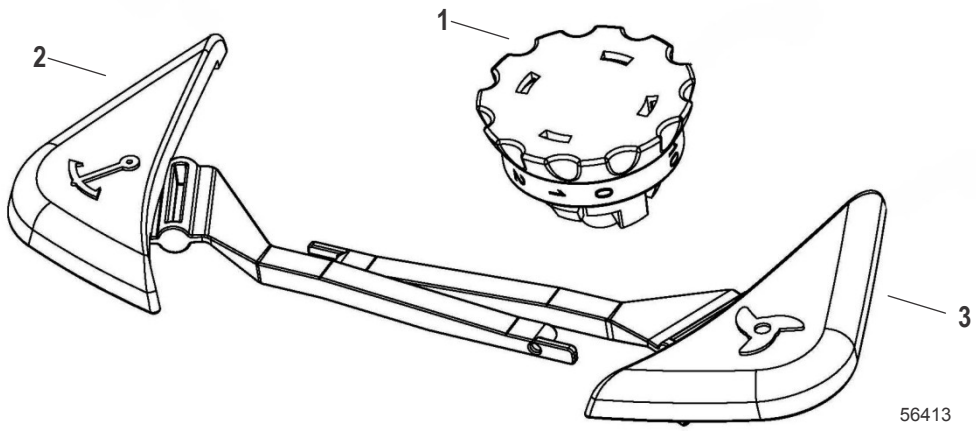
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Transmission assembly (white)			

Foot Pedal Harness Kit



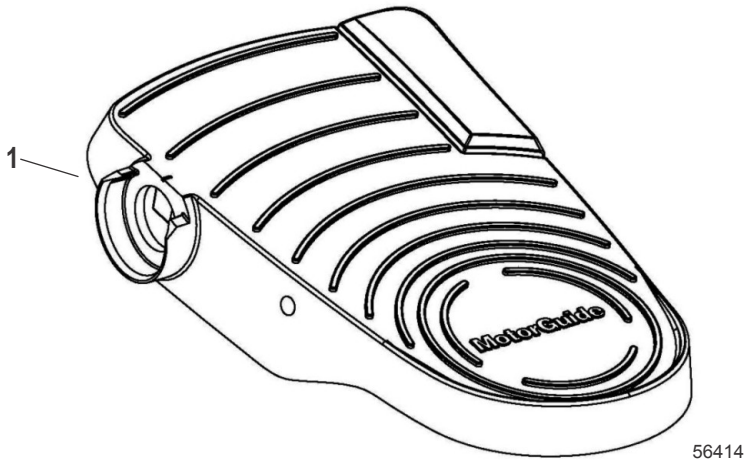
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Foot pedal harness assembly			

Foot Pedal Button Kit



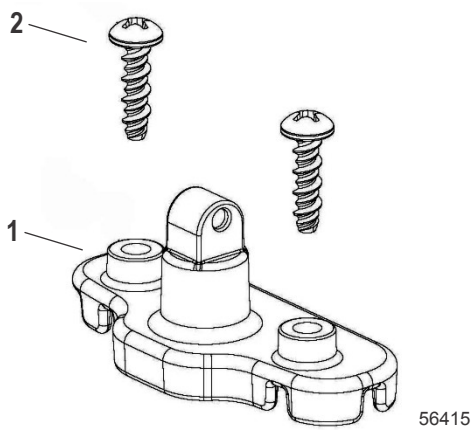
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Rotary knob			
2	1	Anchor button			
3	1	Propeller button			

Foot Pedal Tread Kit



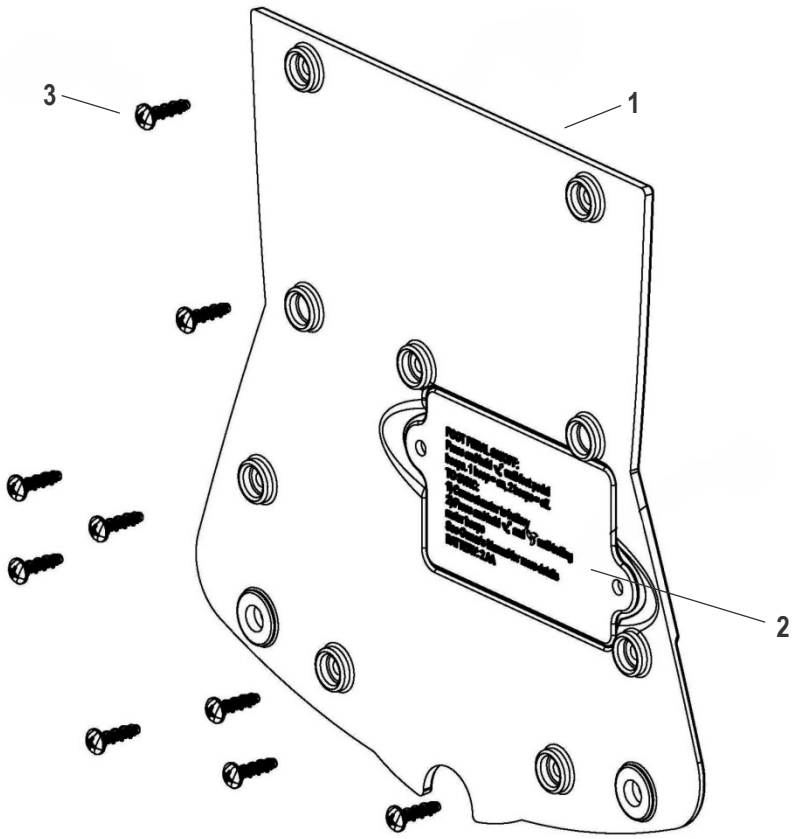
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Foot pedal tread assembly			

Pedal Bezel Service Kit



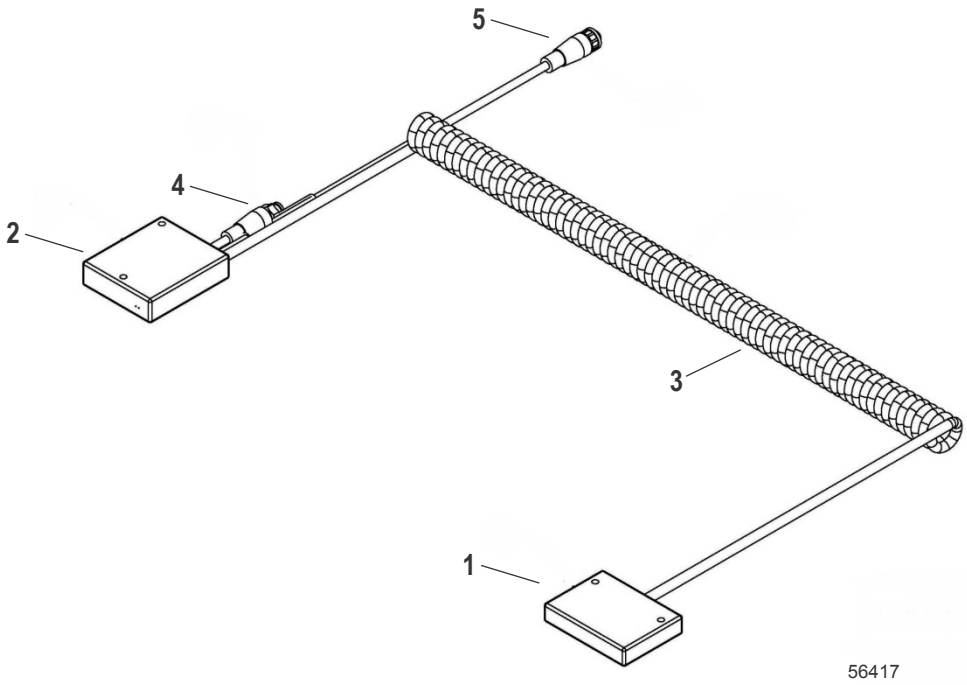
Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Bezel assembly			
2	2	Stainless steel screw (self-tapping)			

Foot Pedal Bottom Cover Kit



Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Bottom cover			
2	1	Battery cover			
3	9	Stainless steel screw (self-tapping)			

GPS Module Kit



Ref. No.	Qty.	Description	Torque		
			Nm	lb-in.	lb-ft
1	1	Upper GPS module			
2	1	Lower GPS module			
3	1	Curly cable			
4	1	Communication cable			
5	1	Cable assembly			

Notes:

Trolling Motor Assembly

Section 3B - Top Housing and Column

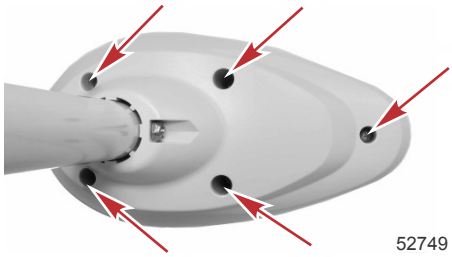
Table of Contents

Top Housing and Column Disassembly

⚠ WARNING

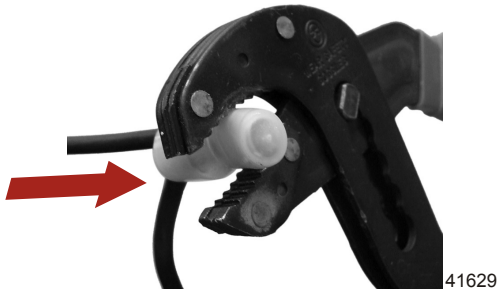
Before working around electrical system components, disconnect the battery cables from the battery to prevent injury or damage to the electrical system due to an accidental short circuit.

1. Ensure that the trolling motor is disconnected from its battery or power supply.
2. Move the trolling motor into the stowed position.
3. Remove the five screws securing the top cover to the trolling motor head.



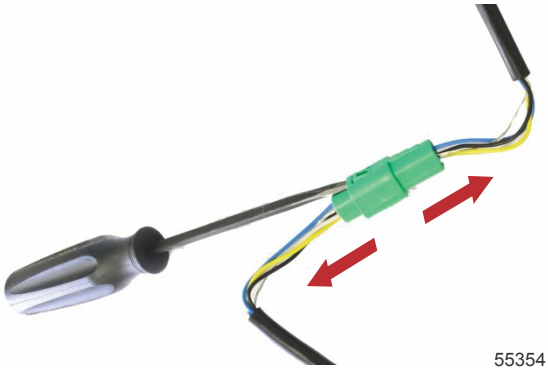
4. Label each wire located inside the trolling motor head.
5. Squeeze the wire connectors perpendicular to the crimp with pliers to release the wire connectors. Remove the wires from the wire connectors.

   IMPORTANT: Do not cut the wires to remove the wire connectors. Cutting the wires could leave the wires too short to be reconnected.

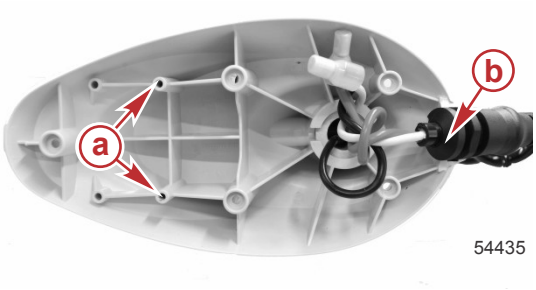


6. Insert a small screwdriver or pick into the slot on the sonar connector (if equipped), then gently pull the two connector halves apart.

   IMPORTANT: Do not pry on the sonar connector or damage to the connector will result.

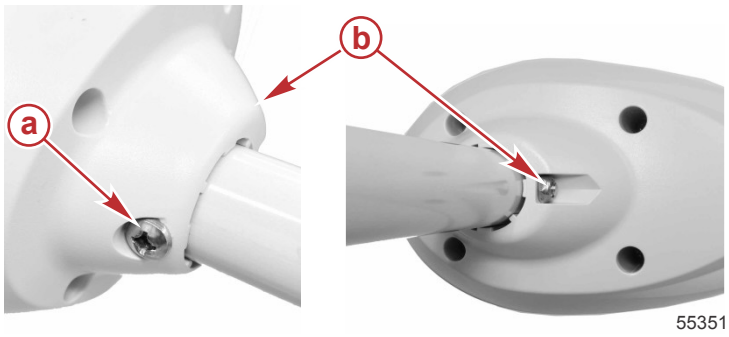


7. Remove the cable grommet from the trolling motor head.



a - GPS module mounting holes
b - Cable grommet

8. Remove the nut and bolt securing the trolling motor head to the column. Remove the trolling motor head from the column.



a - Bolt
b - Nut

9. Remove the depth collar by loosening the depth collar knob, then sliding the depth collar off the column.
10. Press and hold the stow/deploy release pedal, then slide the column and lower unit assembly out of the steering transmission.

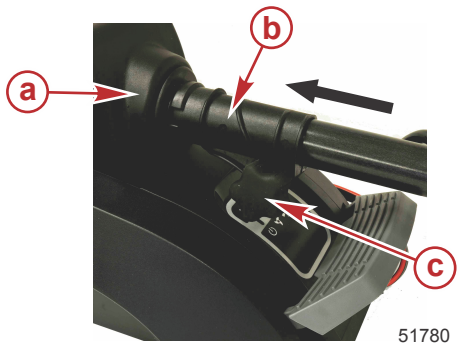
a - Lower unit
b - Depth collar
c - Column
d - Curly cable
e - Stow/deploy release pedal
f - Deck mount

Top Housing and Column Assembly

1. Press and hold the stow/deploy release pedal while sliding the column and lower unit assembly into the steering transmission until the lower unit rests on the deck mount.

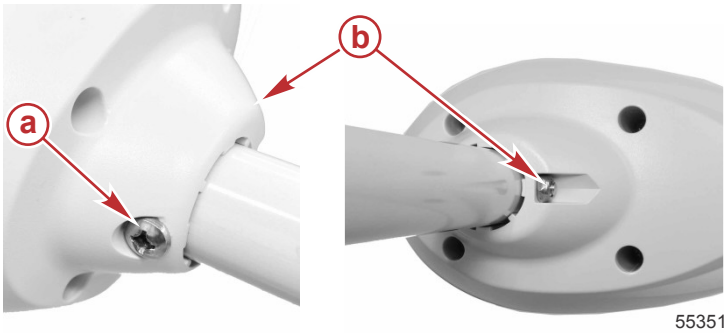
a - Lower unit
b - Depth collar
c - Column
d - Curly cable
e - Stow/deploy release pedal
f - Deck mount

2. Install the depth collar onto the column, then engage the depth collar with the column cap on the steering transmission. Tighten the depth collar knob.



a - Steering transmission
b - Depth collar
c - Depth collar knob

3. Install the trolling motor head onto the column. Install the nylock nut and 1/4-20 x 2.0 in. bolt, then tighten the bolt to the specified torque.

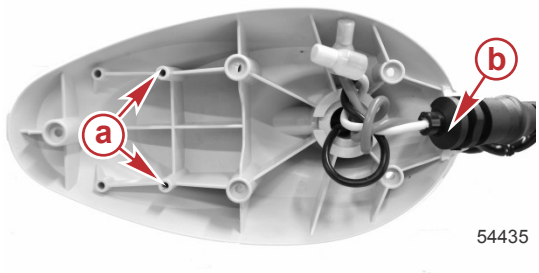


a - 1/4-20 x 2.0 in. bolt
b - Nylock nut

Description	Nm	lb-in.	lb-ft
1/4-20 x 2.0 in. bolt	3.9	35	–

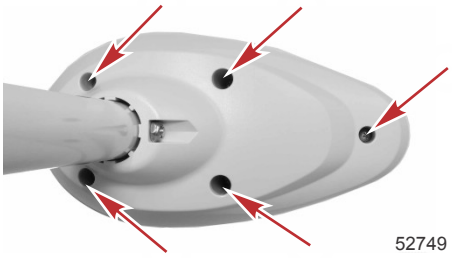
4. Connect the sonar connector halves (if equipped) and place the connector into the trolling motor head.
5. Connect the wires inside the trolling motor head with large crimp connectors.
   - Red to red
   - Black to white

   Refer to the wire labels placed on the wires in the disassembly procedure to verify your connections.
6. Insert the cable grommet into the lower half of the trolling motor head.



a - GPS module mounting holes
b - Cable grommet

7. Install the top cover onto the trolling motor head and secure it with five #8 x 0.625 in. screws. Ensure that no wires are pinched before tightening the screws to specified torque.

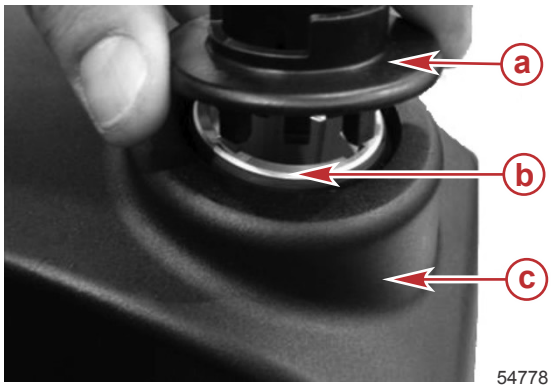


Description	Nm	lb-in.	lb-ft
#8 x 0.625 in. screws (5)	1.5	13.5	–

Column Cap Replacement

1. Remove the column and lower unit from the trolling motor as an assembly. Refer to **Top Housing and Column Disassembly**.
2. Note the orientation of the top column cap, then remove the top column cap from the steering transmission.

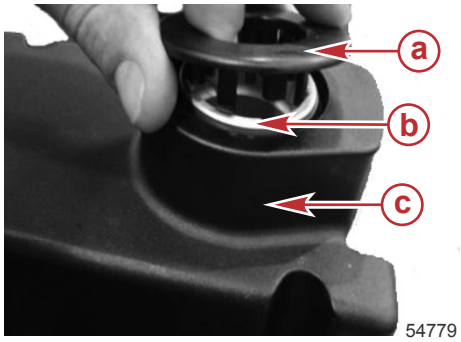
   NOTE: *It may be necessary to gently pry the column cap from the steering transmission. Use care to not damage the seal or the finish on the steering transmission.*
3. Install the new top column cap into the column extrusion in the same orientation.



a - Top column cap
b - Column extrusion
c - Steering transmission

4. Note the orientation of the lower column cap, then remove the lower column cap from the steering transmission.

   NOTE: *It may be necessary to gently pry the column cap from the steering transmission. Use care to not damage the seal or the finish on the steering transmission.*
5. Install the new lower column cap into the column extrusion in the same orientation.



a - Lower column cap
b - Column extrusion
c - Steering transmission

6. Install the column and lower unit from the trolling motor as an assembly. Refer to **Top Housing and Column Assembly**.

Notes:

Trolling Motor Assembly

Section 3C - Lower Unit

Table of Contents

3C

Lubricants, Sealants, Adhesives

Tube Ref No.	Description	Where Used	Part No.
	3M DP-805	Magnet housing	Obtain Locally
86	Loctite 262	Column threads	Obtain Locally
117	Loctite 7649 Primer N	Column threads	92-809824

Special Tools

Brush Spring Compression Tool	91-MXC6031T
 43131	Holds the motor brush in the brush housing when removing and installing the armature

Remove the Lower Unit from the Column

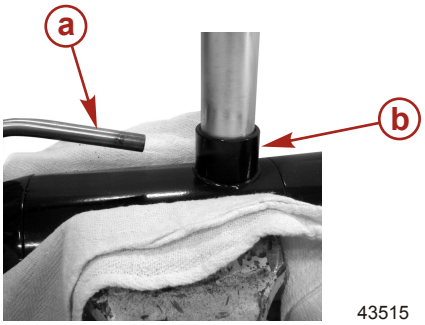
IMPORTANT: Do not use a pipe wrench to remove the lower unit from the column. A pipe wrench may allow corrosion to occur, or the friction collar and depth collar may fail. Use a strap wrench.

1. Disassemble the top housing. Refer to **Section 3B - Top Housing and Column Disassembly**.
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.



43515

a - Heating torch
b - Column collar

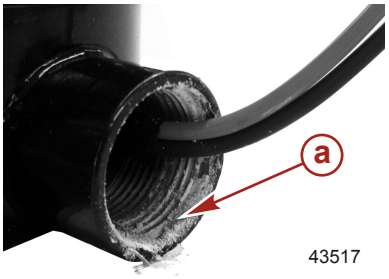
5. Use a strap wrench to rotate the column counterclockwise to loosen the column from the lower unit. When the column is loose, turn off the heating torch.
6. Unscrew the column from the lower unit.

Assemble the Lower Unit to the Column

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

1. Ensure 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.

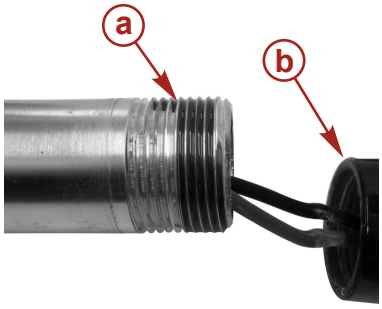


a - Excess thread adhesive

2. Slide the column over the motor lead wires.
3. Apply Loctite 7649 Primer N to the column threads. Allow the primer to dry.

Tube Ref No.	Description	Where Used	Part No.
117	Loctite 7649 Primer N	Column threads	92-809824

4. Rotate the column while applying Loctite 262 to fully coat the first half of the threads.



a - Loctite 262 on column threads
b - Lower unit collar

Tube Ref No.	Description	Where Used	Part No.
86	Loctite 262	Column threads	Obtain Locally

5. Insert the column into the collar of the lower unit and turn the column to start the threads.
6. Screw the column into the lower unit and tighten to the specified torque.

Description	Nm	lb-in.	lb-ft
Assemble column to lower unit	81.3	–	60

7. Wipe off the excess Loctite 262 from the lower unit and column.

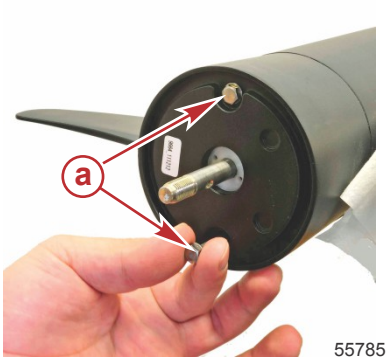
Lower Unit Disassembly

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

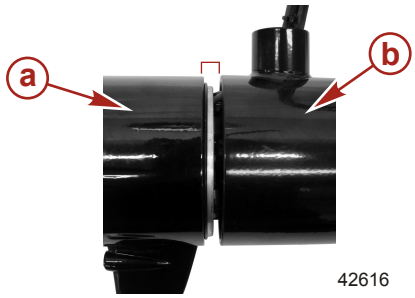
1. Disassemble the top housing. Refer to **Section 3B - Top Housing and Column Disassembly**.

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



a - Through bolts

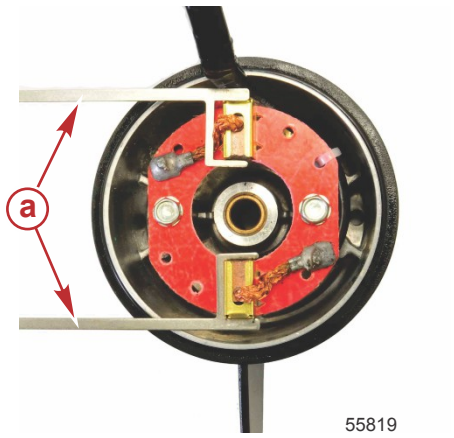
3. Carefully pull the commutator cap away from the lower unit housing assembly approximately 1.27 cm (0.50 in.).



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.

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

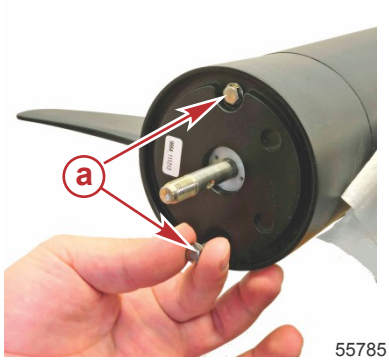
Brush Spring Compression Tool	91-MXC6031T

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.

Nonwire 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 and Column Disassembly.***

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

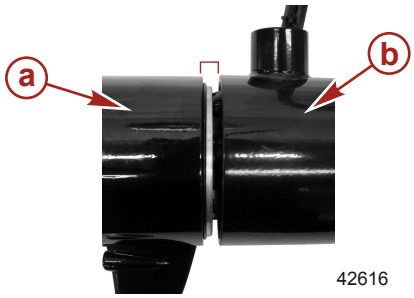


a - Through bolts

2. Remove the nose cone.

a - Nose cone

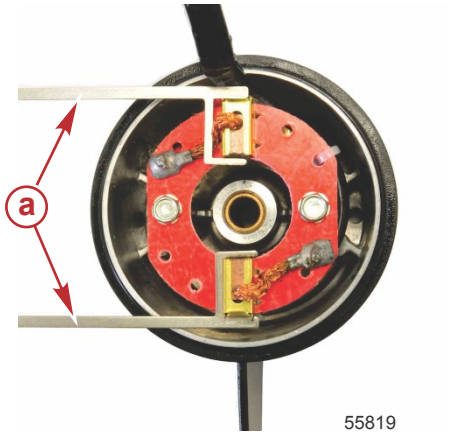
3. Carefully pull the commutator cap away from the lower unit housing assembly approximately 1.27 cm (0.50 in.).



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.

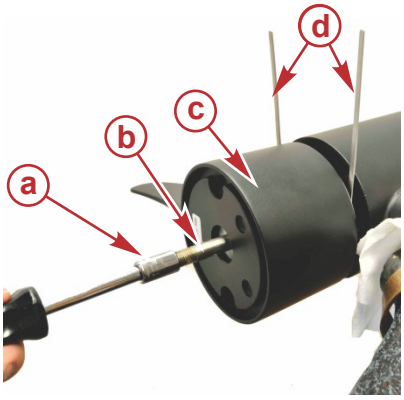
IMPORTANT: The brushes must be held back when removing the armature or serious damage may occur to the brushes and armature shaft.



a - Brush spring compression tools

Brush Spring Compression Tool	91-MXC6031T

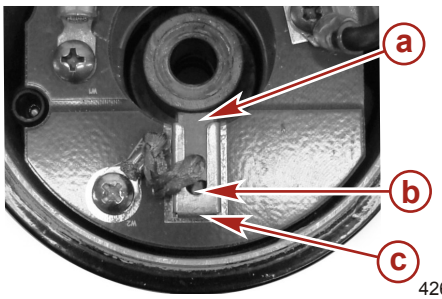
5. Push against the armature shaft with a blunt object while continuing to hold the commutator cap to maintain the 1.27 cm (0.50 in.) gap. Continue pushing on the armature shaft until the commutator cap can be removed by hand.



55787

- **a -** Blunt object
- **b -** Armature shaft
- **c -** Commutator cap
- **d -** Brush compression tools

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



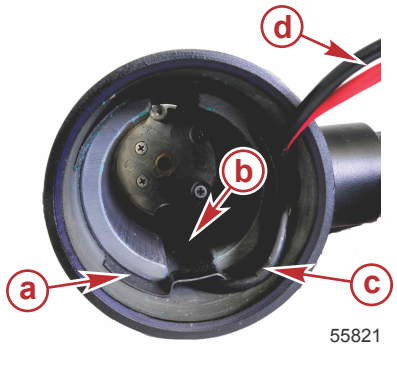
42656

- **a -** Brush
- **b -** Brush spring inside brush housing - not visible
- **c -** Brush housing

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 and Column Disassembly**.
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.

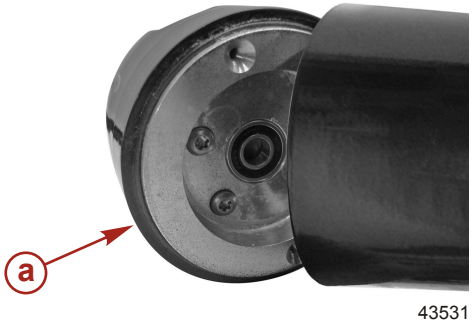


55821

- **a -** Retaining ring
- **b -** Cable retainer
- **c -** Tab on retaining ring
- **d -** Lower unit power wires

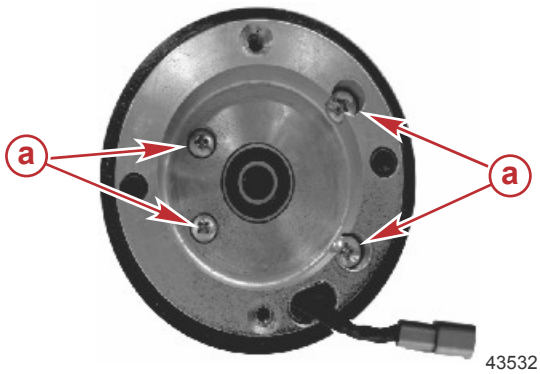
Bearing Housing and Nose Cone Removal

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



a - Nose cone and bearing 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.



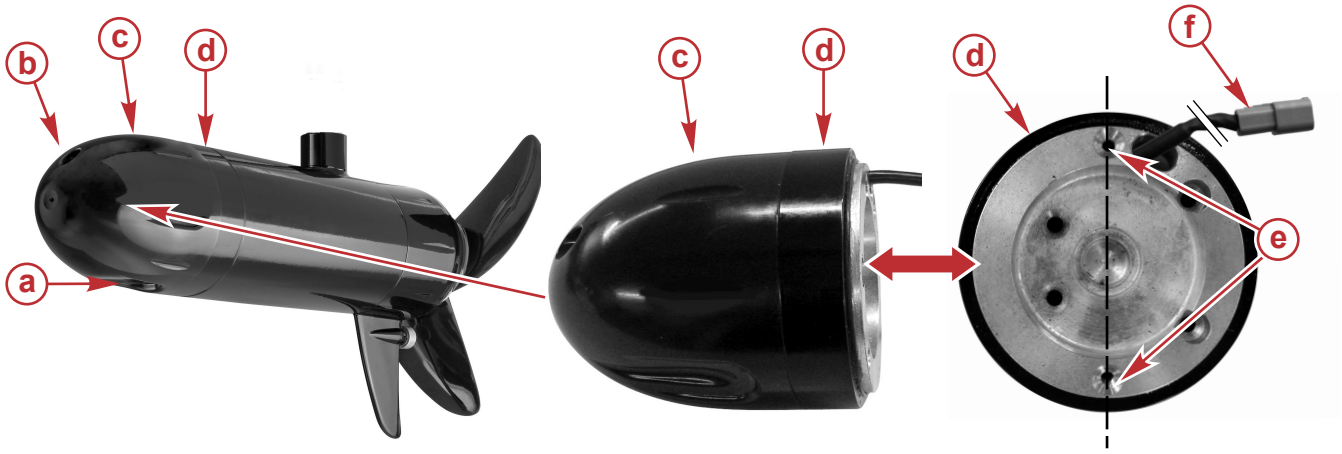
a - Bearing housing screws

Nose Cone and Bearing Housing Installation

1. Install a new O-ring onto the nose cone.
2. Insert the sonar cable through the bearing housing hole as shown.

a - O-ring
b - Sonar cable

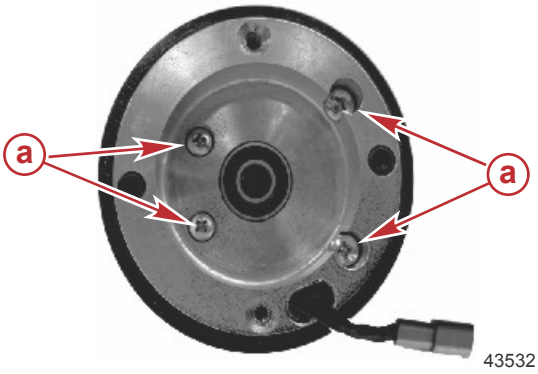
3. Align the nose cone to the bearing housing. Ensure the flat surface of the nose cone faces down and that the temperature sensor faces up. Ensure that the bearing housing is aligned to the nose cone as shown.



55788

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

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



43532

a - Bearing housing screws

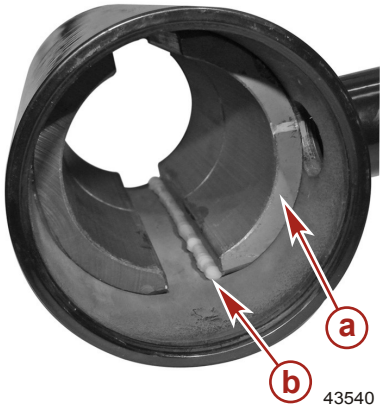
Description	Nm	lb-in.	lb-ft
Bearing housing screws	3.1	27.5	–

Sonar Cable Installation

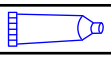
IMPORTANT: If the sonar cable retainer is already installed in the magnet housing, go to step 3.

1. Remove the old cable retainer and acrylic adhesive, if applicable.

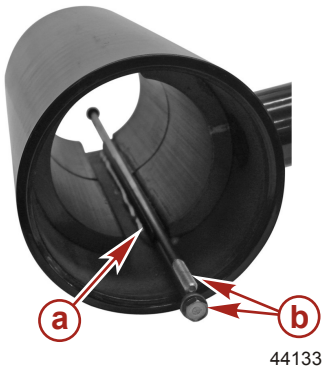
2. Using the specified acrylic adhesive, apply a thin line of adhesive on the right side of the top magnet as shown.



a - Top magnet
b - Adhesive

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

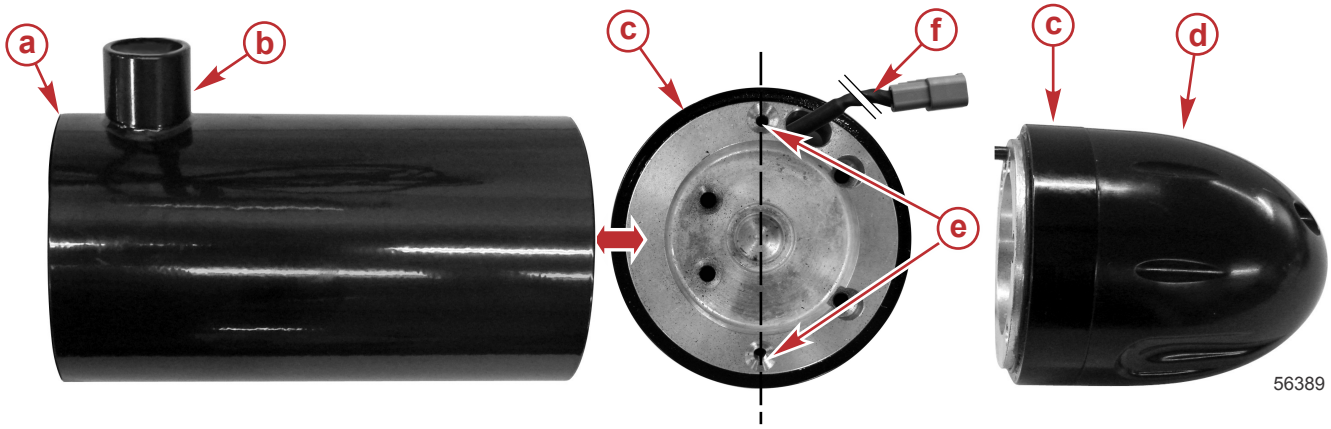
3. Take two of the lower unit through bolts and place them inside the cable retainer. The through bolts will help position the cable retainer on top of the acrylic adhesive and prevent the plastic edges from melting together. Place the cable retainer with the through bolts on top of the acrylic adhesive.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



a - Cable retainer
b - Through bolts

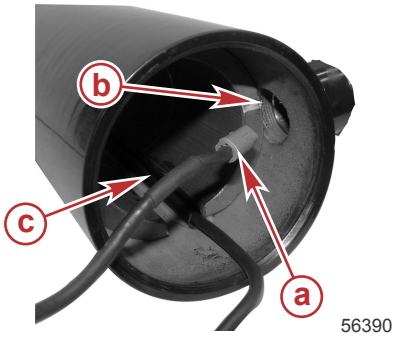
4. Align the nose cone and bearing housing to the magnet housing. Ensure that the sonar cable hole of the bearing housing is positioned as shown. The through bolt holes must be positioned, as shown, to assemble the lower unit securely.

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



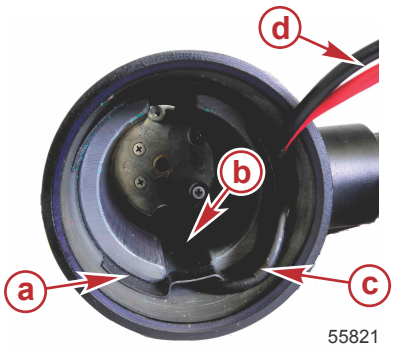
a - Magnet housing
b - Column collar
c - Bearing housing
d - Nose cone
e - Through bolt holes
f - Sonar cable

5. Route the sonar cable through the cable retainer. Ensure that the nose cone and bearing housing are flush against the magnet housing and that the sonar cable is pulled taut. Insert the sonar cable through the column.



a - Sonar cable
b - Column
c - Cable retainer

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



a - Retaining ring
b - Cable retainer
c - Tab on retaining ring
d - Lower unit power wires

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

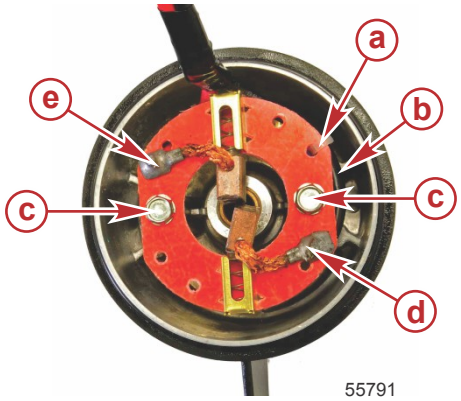
Commutator Cap Subassembly

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.

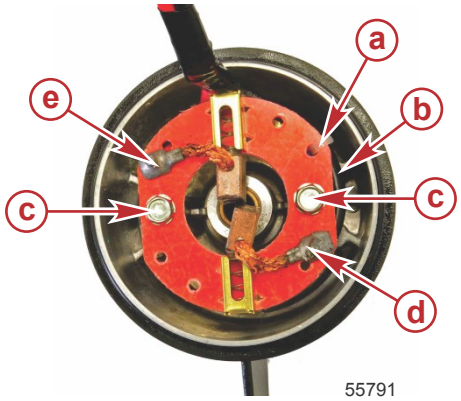


a - Cable tie
b - Negative (–) motor lead
c - Brush board screw
d - Negative (–) shunt wire solder connection
e - Positive (+) shunt wire solder connection

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

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

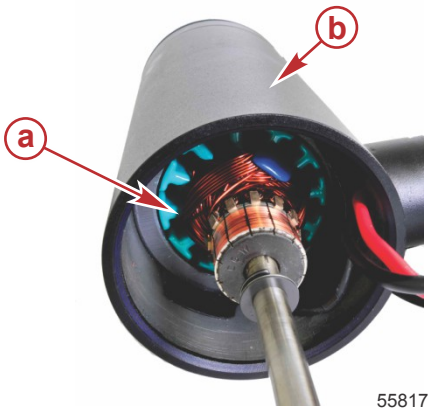
5. Route the motor leads to the top of the commutator cap (away from the skeg) and secure them together with electrical tape where they exit the commutator cap. Do not leave any slack in the wires.

Lower Unit Assembly

Armature and Brush Board Assembly

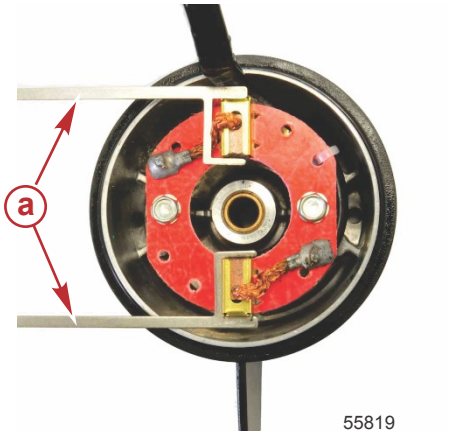
1. If the wiring harness was removed from the column, insert the wiring harness up through the column before installing the armature.

2. Insert the armature into the magnet housing.



a - Armature
b - Magnet housing

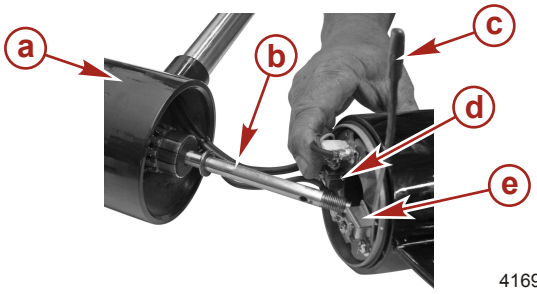
3. Retain the brushes in their housings with two brush spring compression tools.



a - Brush spring compression tools

Brush Spring Compression Tool	91-MXC6031T

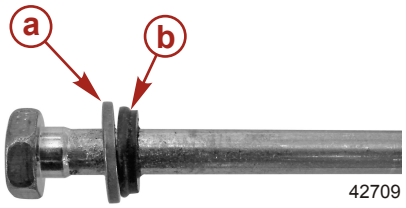
4. While retaining the brushes in their housings, slide the armature shaft into the center hole of the brush board assembly.
IMPORTANT: The brushes must be retained in their housings to avoid damage to the brushes and armature shaft.



a - Lower unit housing assembly
b - Armature shaft
c - Brush spring compression tool
d - Brush tab
e - Brush housing

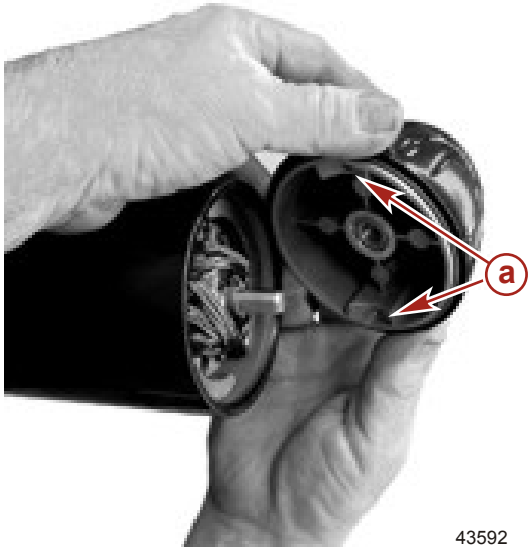
Assemble Commutator Cap to Lower Unit Housing

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



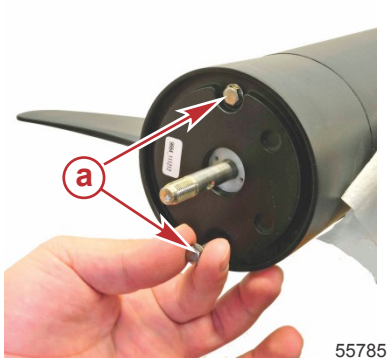
a - Washer
b - Seal

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



a - Through bolt holes

3. 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

1. Disconnect the power cables from the battery.
2. While holding the propeller blade with one 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.*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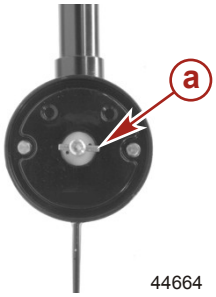
Installing the Propeller

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



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a - Propeller pin

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


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3. Install the washer (or anode, for saltwater models) onto the propeller shaft then install the propeller nut. Tighten the propeller nut securely.


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4. Tighten the propeller nut another ¼ turn.

Trolling Motor Assembly

Section 3D - Foot Pedal and Handheld Remote

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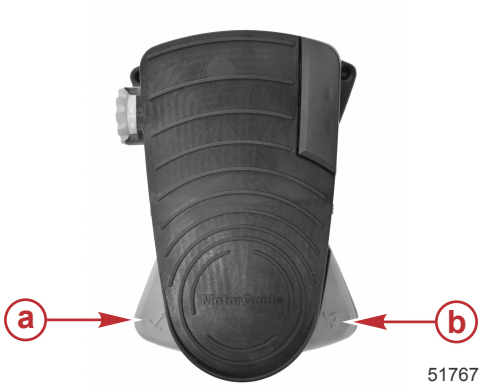
3
D

Activating the Wireless Foot Pedal

Each wireless foot pedal and wireless handheld remote has a unique serial number, and each wireless controller must be synced individually to the trolling motor receiver. The trolling motor receiver can sync up to 40 wireless controllers. This ensures that the trolling motor will respond to commands only from designated controllers. Follow the instructions below to activate a wireless controller with your trolling motor. For erasing and reprogramming information, refer to **Foot Pedal and Handheld Remote Reprogramming and Battery Replacement**.

IMPORTANT: To activate multiple foot pedals or remotes, the motor must be unplugged from the power source and then plugged back into the power source between activating each control device.

1. Install the batteries into the wireless foot pedal. Refer to **Foot Pedal and Handheld Remote Reprogramming and Battery Replacement**.
2. Connect the battery cables to the battery, or plug in the battery cable to a power source. Within ten seconds of connecting the battery cables to their terminals, press and hold the **propeller** and **anchor** buttons on the wireless foot pedal simultaneously.
3. Listen for a multitone beep, indicating that the receiver has synced the electronic serial number.

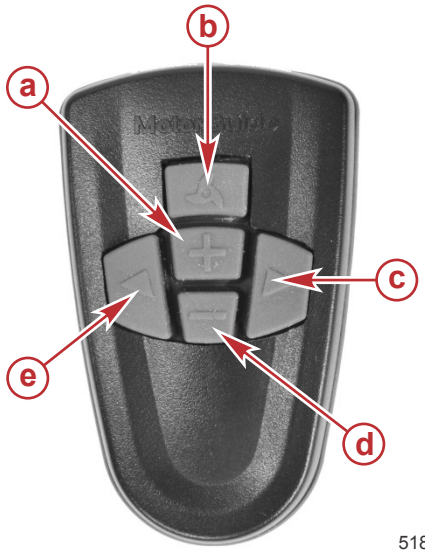


a - **Anchor** button (foot pedal on/off)
b - **Propeller** button (propeller on/off)

4. To turn the pedal on or off, press and hold the **anchor** button. One beep from the foot pedal indicates that the foot pedal is turned on, two beeps indicate that the foot pedal is turned off.

Activating the Handheld Remote

1. If the trolling motor battery cables are connected, disconnect the battery cables from the trolling motor battery, starting with the negative (–) lead.
2. Connect the battery cables to the battery or plug in the battery cable to a power source. Within ten seconds of connecting the battery cables to their terminals, press and hold the **left arrow** button and **right arrow** button on the handheld remote simultaneously.
3. Listen for a multitone beep, which indicates that the receiver has stored the electronic serial number.



a - **+** button—increase speed
b - **Propeller** button—propeller on/off
c - **Right arrow** button—steer right
d - **–** button—decrease speed
e - **Left arrow** button—steer left

Foot Pedal and Handheld Remote Reprogramming and Battery Replacement

Erasing the Receiver's Memory

Erasing the receiver's memory will erase all electronic ID numbers that are stored in the receiver's memory.

1. Plug in the battery cable to a power source. Within ten seconds, press the **left arrow**, **right arrow**, **+**, and **–** buttons on the handheld remote simultaneously.
2. Listen for a long beep indicating the receiver has erased all stored electronic ID numbers.

   NOTE: *If all four buttons on the remote are not pressed simultaneously within ten seconds, or a long beep is not heard, unplug the battery cables from the power source and then refer to* ***Activating the Wireless Foot Pedal*** *and* ***Activating the Handheld Remote****.*

Reprogramming the Wireless Foot Pedal or Remote

NOTE: *This activation procedure applies to the foot pedal and handheld remote.*

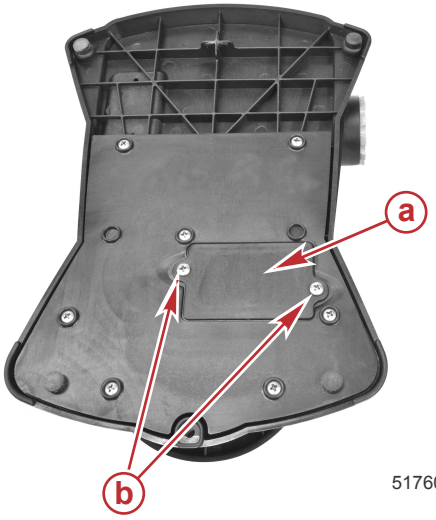
IMPORTANT: To activate multiple foot pedals or remotes, the motor must be unplugged from the power source and then plugged back into the power source between activating each control device.

1. Unplug the battery cables from the power source. Wait 30 seconds and then plug the motor into the power source.
2. In less than ten seconds, press and hold the **left arrow** and **right arrow** buttons on the handheld remote. For the foot pedal controller, hold the **propeller** and **anchor** button simultaneously.

Foot Pedal Battery Replacement

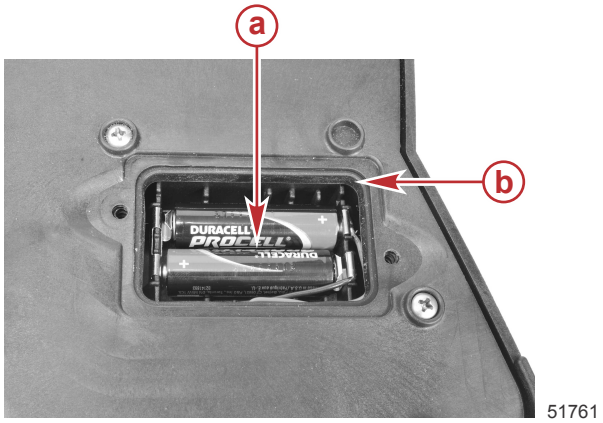
Battery required: Two AA alkaline batteries.

1. Remove the two screws securing the battery cover plate. Remove the battery cover plate.



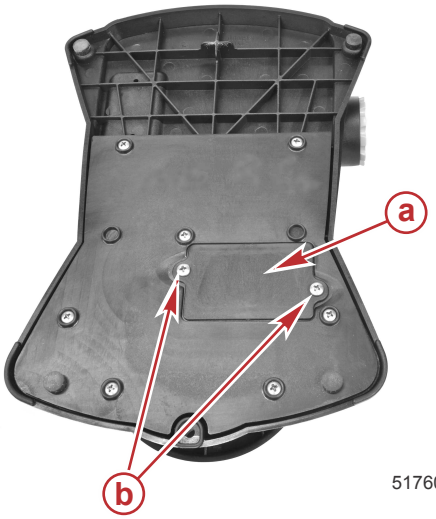
a - Battery cover plate
b - Screws

2. Remove the batteries from the battery holder.
3. Install the new batteries in the proper orientation for correct polarity.
4. Ensure that the rubber seal is positioned correctly around the battery cover plate.



a - AA alkaline batteries
b - Rubber seal

5. Replace the battery cover plate and install the two screws. Tighten the screws securely.



a - Battery cover plate
b - Screws

Handheld Remote Battery Replacement (Xi5 Models without Pinpoint GPS)

Battery required: One AAA alkaline battery.

1. Remove the four screws from the back of the handheld remote. Remove the back cover.

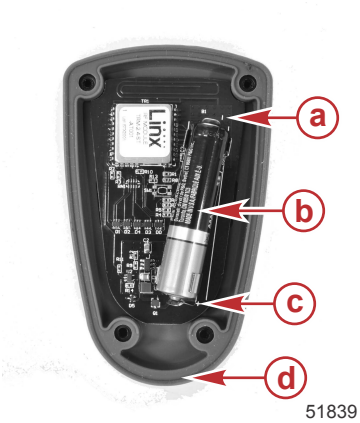
a - Screws (4)

2. Remove the old battery from the battery holder.

3. Insert the new battery with the positive (+) side facing the positive (+) end of the battery holder.

4. Replace the handheld remote back plate and install the four screws. Ensure that the rubber seal is positioned correctly between the two halves of the handheld remote. Tighten the screws securely.

   IMPORTANT: Do not overtighten the screws or damage to the handheld remote may result.



a - Negative (–) end of battery holder
b - Battery
c - Positive (+) end of battery holder
d - Rubber seal

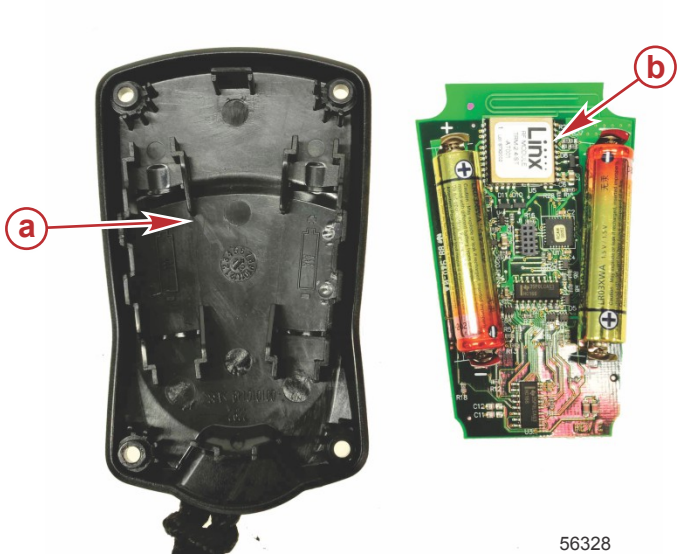
Handheld Remote Battery Replacement (Xi5 Models with Pinpoint GPS)

Batteries required: Two AAA alkaline batteries.

1. Remove the four screws from the back of the handheld remote. Remove the back cover.

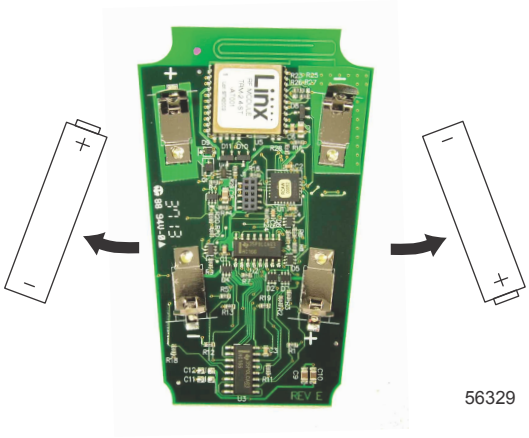
a - Screws (4)

2. Remove the circuit board from the back cover. Turn the circuit board over to access the batteries.

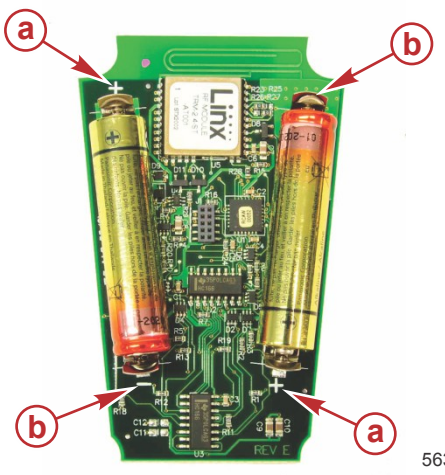


a - Back cover
b - Circuit board

3. Remove the old batteries from the battery holders.



4. Install the new batteries into the battery holders. Ensure that the batteries are installed in the correct orientation.



a - Positive (+) battery terminal end
b - Negative (–) battery terminal end

5. Turn the circuit board over and place it gently into the recess in the back cover.

6. Ensure that the rubber seal is seated into the front cover.

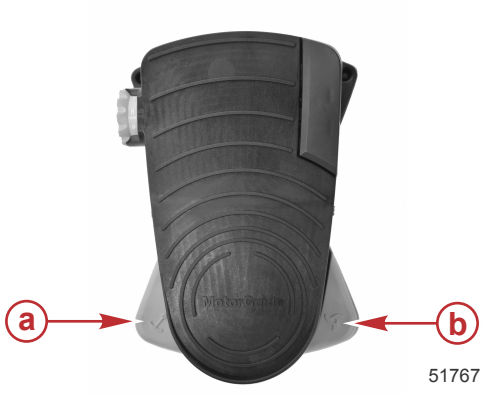
7. Install the circuit board and back cover onto the front cover and rubber seal. Ensure that both cover halves seat completely against the rubber seal. Tighten the screws securely.
   IMPORTANT: Do not overtighten the screws or damage to the handheld remote may result.

a - Screws (4)

Foot Pedal Troubleshooting

Foot Pedal will Not Turn On

1. Replace the foot pedal batteries. Refer to **Foot Pedal and Handheld Remote Reprogramming and Battery Replacement**.
2. Power up and deploy the trolling motor.
3. Press the anchor button to turn the foot pedal on. The pedal will emit one beep when it is turned on. If the pedal does not emit one beep when it is turned on, the foot pedal must be replaced.



a - **Anchor** button (foot pedal on/off)
b - **Propeller** button (propeller on/off)

Foot Pedal will Not Sync

1. Replace the foot pedal batteries and reprogram the foot pedal. Refer to **Foot Pedal and Handheld Remote Reprogramming and Battery Replacement**.
2. If the foot pedal does not sync after replacing the batteries and reprogramming, replace the foot pedal.

Foot Pedal Quits Working or Sticks During Operation

1. Replace the foot pedal batteries. Refer to **Foot Pedal and Handheld Remote Reprogramming and Battery Replacement**.
2. If replacing the foot pedal batteries does not correct the problem, replace the foot pedal.

Trolling Motor Assembly

Section 3E - Mounts and Wireless Controller Board

Table of Contents

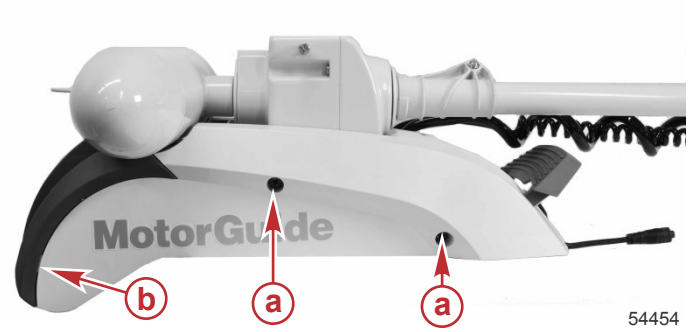
Lubricants, Sealants, Adhesives

Tube Ref No.	Description	Where Used	Part No.
6	Dielectric Grease	Screws and ring terminals	92-823506 1
125	Heat Transfer Compound	Underside of the wireless controller board	92-805701

Locking Cradle Replacement

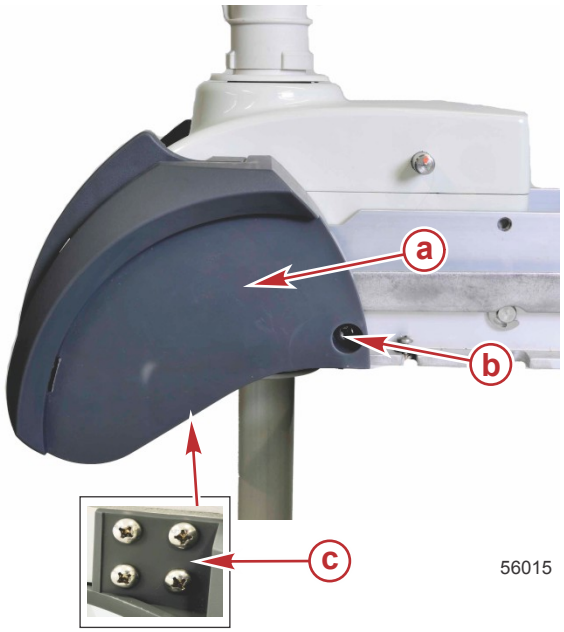
Locking Cradle Removal

1. Remove the two screws securing the side panel cover to the trolling motor. Remove the side cover, taking care not to damage the locating tab.



a - Side panel screws
b - Locating tab

2. Move the trolling motor to the deployed position.
3. Remove the five screws securing the locking cradle to the trolling motor base.

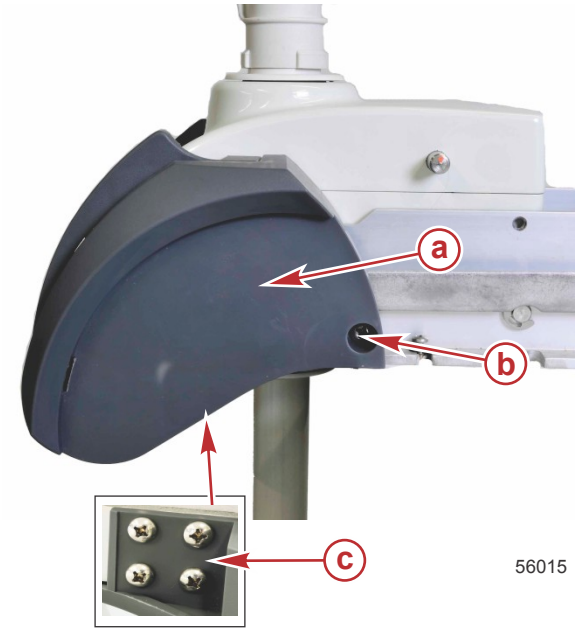


a - Locking cradle
b - 1/4 x 0.50 in. stainless steel screw
c - 1/4 x 0.50 in. stainless steel screw (4)

4. Repeat the removal procedure for the other locking cradle if required.

Locking Cradle Installation

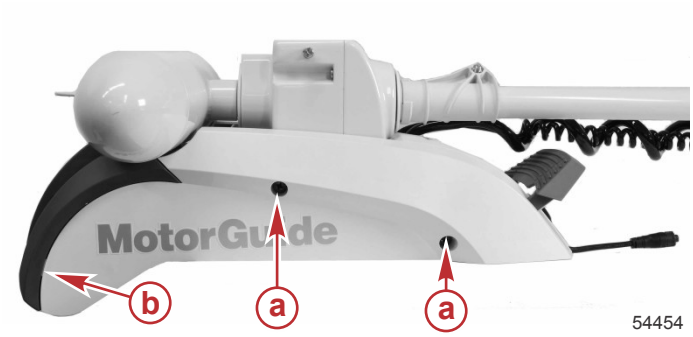
1. Install the locking cradle onto the trolling motor base and secure it with five stainless steel screws. Tighten the screws to the specified torque.



a - Locking cradle
b - 1/4 x 0.50 in. stainless steel screw
c - 1/4 x 0.50 in. stainless steel screw (4)

Description	Nm	lb-in.	lb-ft
Locking cradle screws (1/4 x 0.50 in.) stainless steel	5.1	45	–

2. Move the trolling motor to the stowed position.
3. Install the side panel cover and secure it with two screws. Tighten the screws to the specified torque.



a - Side panel screws
b - Locating tab

Description	Nm	lb-in.	lb-ft
Side panel cover screws (1/4 x 0.50 in.) stainless steel	5.1	45	–

4. Repeat the procedure for the other locking cradle if required.

Wireless Controller Board

Removal

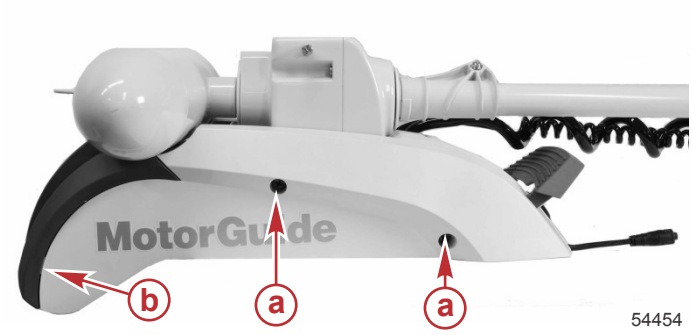
⚠ WARNING

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.

IMPORTANT: Use an antistatic discharge strap while working with the wireless controller board to prevent damage to the wireless controller board components. Failure to use an antistatic discharge strap can damage the wireless controller board.

1. Ensure that the trolling motor is disconnected from its battery or power supply.

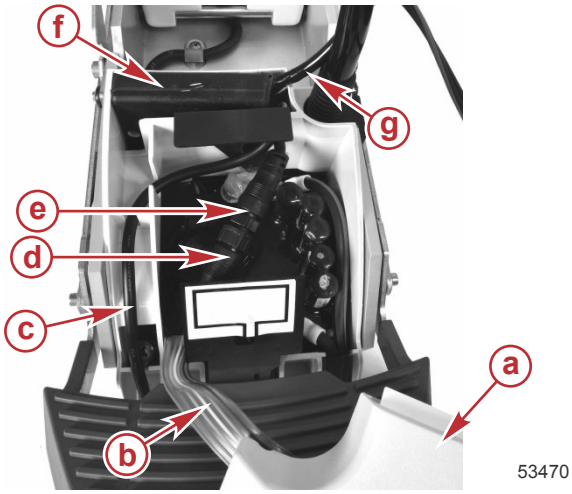
2. Remove the two screws securing each side panel cover to the trolling motor. Remove both side panel screws, taking care not to damage the locating tabs.



a - Side panel screws
b - Locating tab

3. Move the trolling motor to the deployed position.
4. Remove the status indicator light panel.

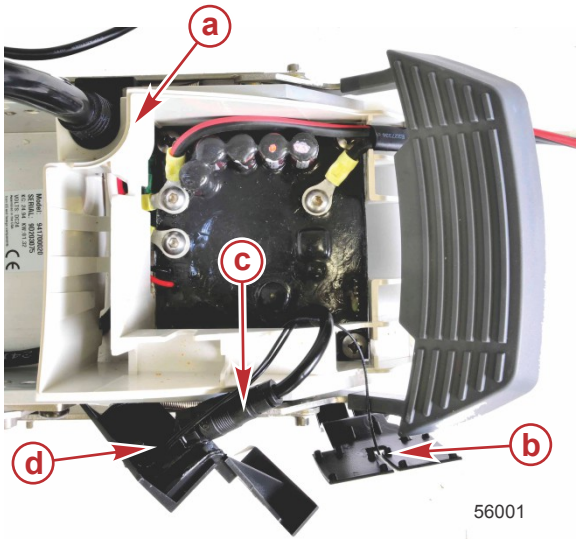
5. Disconnect the GPS module connectors and the status indicator light harness.
6. Remove the NMEA cable from its holders.
7. Remove the lower GPS module from the holder and set it aside.



a - Status indicator light panel
b - Status indicator light harness
c - NMEA cable
d - Female GPS connector
e - Male GPS connector
f - Lower GPS module
g - GPS cable (to top housing)

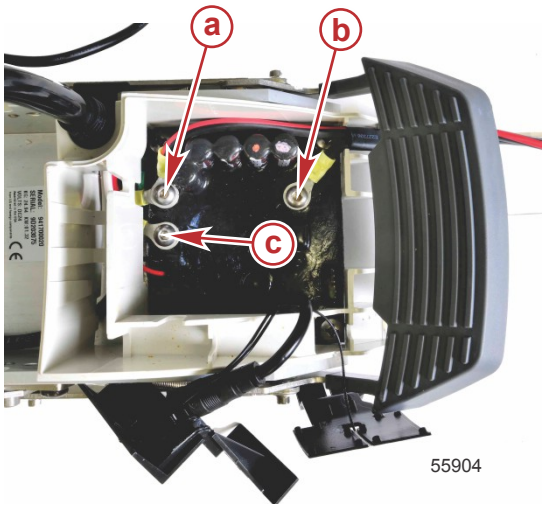
8. Lift up on the GPS module holder, then move the GPS antenna out of the way.

9. Move the handheld remote antenna and female GPS connector out of the way.



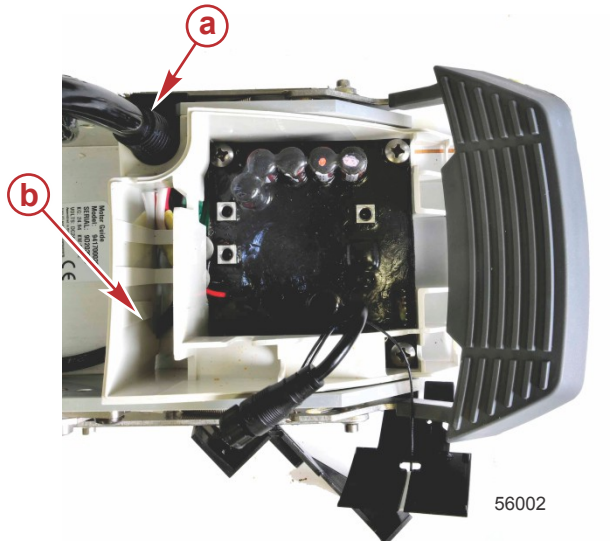
a - GPS module holder
b - GPS antenna
c - Female GPS connector
d - Reed switch retainer

10. Remove the three screws securing the battery cables and motor power cables to the wireless controller board. Remove the battery cables.



a - Screw securing the positive (+) battery cable and positive (+) motor power cable
b - Screw securing the negative (–) battery cable
c - Screw securing the negative (–) motor power cable

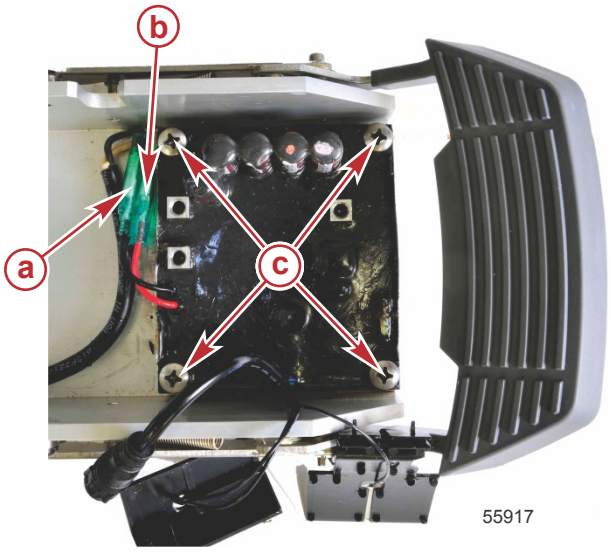
11. Lift the GPS module holder and remove the curly cable grommet from the mount by moving it side-to-side while pulling up.



a - Curly cable grommet
b - GPS module holder

12. Move the GPS antenna, female GPS connector, and handheld remote antenna onto the wireless controller board.

13. Press down on the stow/deploy pedal and lift the GPS module holder to remove.
    IMPORTANT: Use care when removing the GPS module holder, or damage to the status indicator light pins can occur.
14. Disconnect the steering transmission bullet connectors.
15. Remove the four screws securing the wireless controller board to the mount. Remove the wireless controller board.



a - Steering transmission positive (+) bullet connector
b - Steering transmission negative (–) bullet connector
c - Screws securing the wireless controller board

Installation

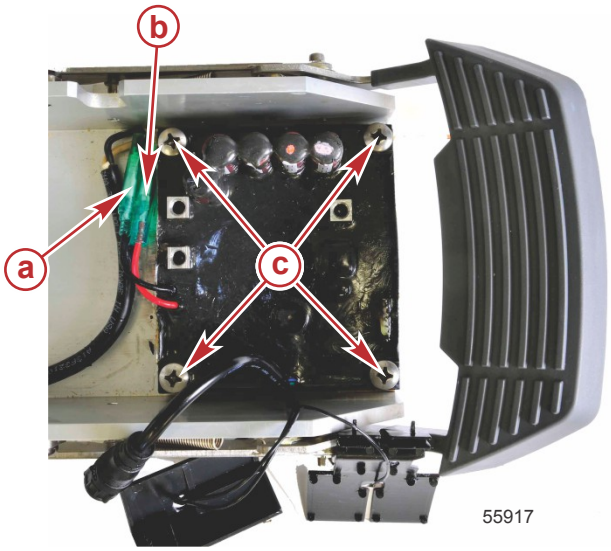
1. Apply Heat Transfer Compound to the underside of the wireless controller board. Place the controller onto the mount.

Tube Ref No.	Description	Where Used	Part No.
125	Heat Transfer Compound	Underside of the wireless controller board	92-805701

2. Install the four 1/4-20 x 1.00 in. stainless steel screws securing the wireless controller board. Tighten them to the specified torque.

Description	Nm	lb-in.	lb-ft
1/4-20 x 1.00 in. stainless steel screws	5.1	45	–

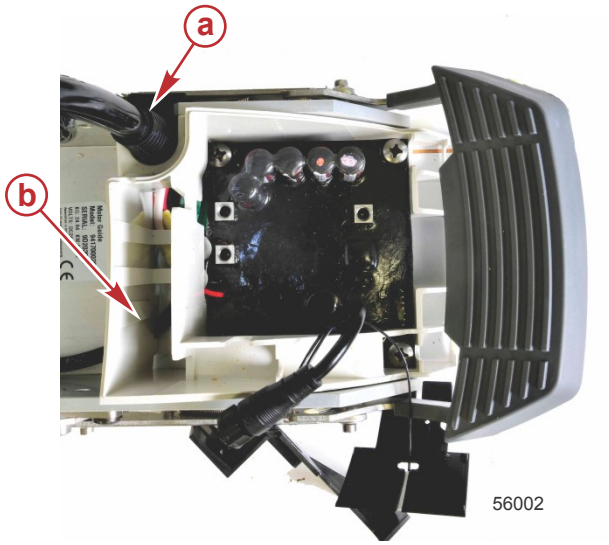
3. Connect the steering transmission positive (+) and negative (–) bullet connectors (black to black and red to white).



a - Steering transmission positive (+) bullet connector
b - Steering transmission negative (–) bullet connector
c - 1/4-20 x 1.00 in. stainless steel screws securing the wireless controller board

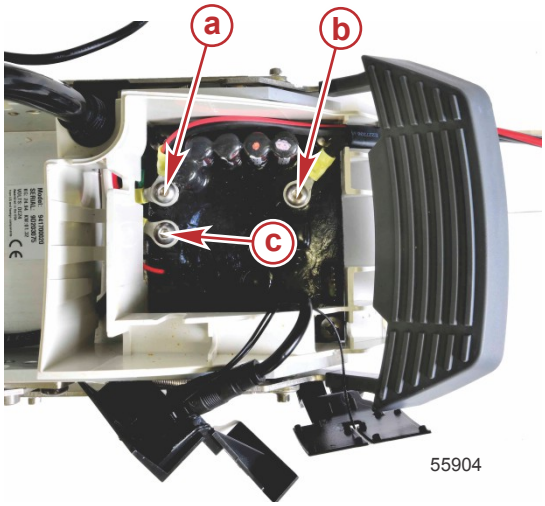
4. Route the female GPS connector, GPS antenna, and wireless remote antenna through the GPS module holder so the wires will not be pinched.
5. Position the curly cable grommet into the opening on the GPS module holder.
6. Press down on the stow/deploy pedal, then place the GPS module holder and curly cable grommet into position as shown. Wiggle the curly cable grommet side-to-side while gently pressing down to fully seat the grommet.

IMPORTANT: Use care when installing the GPS module holder to prevent damage to the status indicator light pins.



a - Curly cable grommet
b - GPS module holder

7. Install the three screws securing the battery cables and motor power cables to the wireless controller board. Tighten the screws to the specified torque. Cover each screw and ring terminal with dielectric grease.



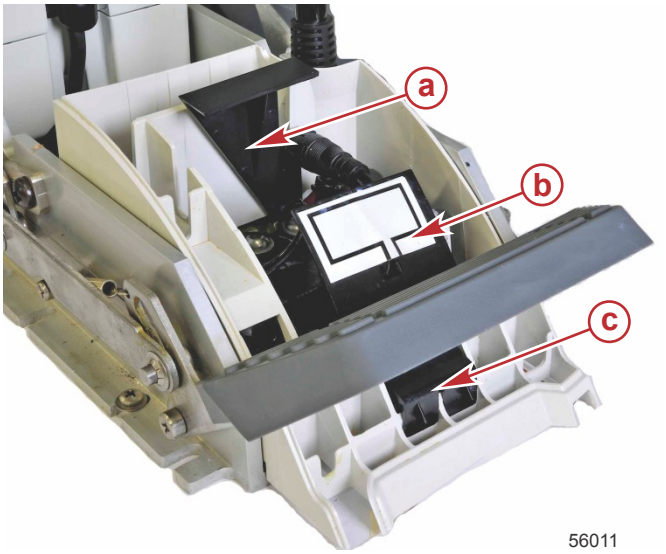
a - Screw securing the positive (+) battery cable and positive (+) motor power cable
b - Screw securing the negative (–) battery cable
c - Screw securing the negative (–) motor power cable

Description	Nm	lb-in.	lb-ft
1/4-20 x 0.375 in. stainless steel screws	2.25	20	–

Tube Ref No.	Description	Where Used	Part No.
6	Dielectric Grease	Screws and ring terminals	92-823506 1

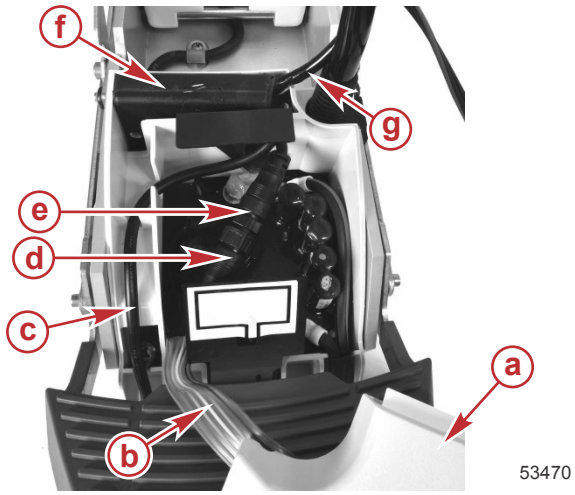
8. Lift the GPS module holder up to install the reed switch holder. Install the GPS antenna onto the GPS module holder.

NOTE: *Ensure that the GPS antenna wire is secured in the molded relief on the GPS antenna.*



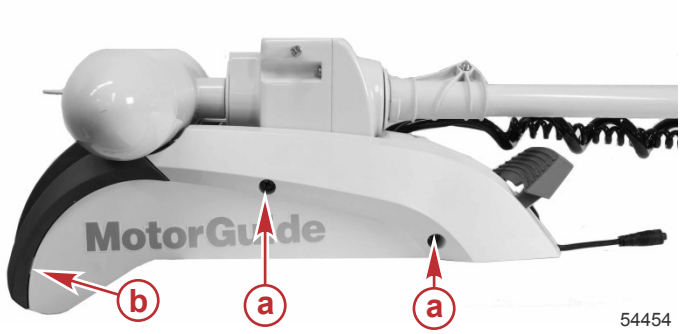
a - Reed switch retainer
b - GPS antenna
c - GPS antenna clipped to GPS module holder

9. Install the lower GPS module into the GPS module holder.
10. Connect the male and female GPS module connectors.
11. Place the NMEA cable into its channel in the GPS module holder.
12. Orient the connector with the brown wire nearest to the GPS module holder. Connect the status indicator light harness to the wireless controller board.



a - Status indicator light panel
b - Status indicator light harness
c - NMEA cable
d - Female GPS connector
e - Male GPS connector
f - Lower GPS module
g - GPS cable (to top housing)

13. Install the status indicator light panel.
14. Move the trolling motor to the stowed position.
15. Install the side panel covers, taking care not to damage the locating tabs. Install the 1/4 x 0.50 in. stainless steel screws and tighten them to the specified torque.



a - Side panel screws
b - Locating tab

Description	Nm	lb-in.	lb-ft
1/4 x 0.50 in. stainless steel screws	5.1	45	–

Notes:

Trolling Motor Assembly

Section 3F - Steering Transmission

Table of Contents

Lubricants, Sealants, Adhesives

Tube Ref No.	Description	Where Used	Part No.
10	Loctite 277	Threads of the three mounting screws	Obtain Locally
67	Loctite 290	Set screw threads	Obtain Locally
95	2-4-C with PTFE	Entire length of all three dowel pins	92-802859A 1
		Outer diameter of all three transmission gears	
		Transmission casting O-ring	

Steering Transmission Removal and Installation

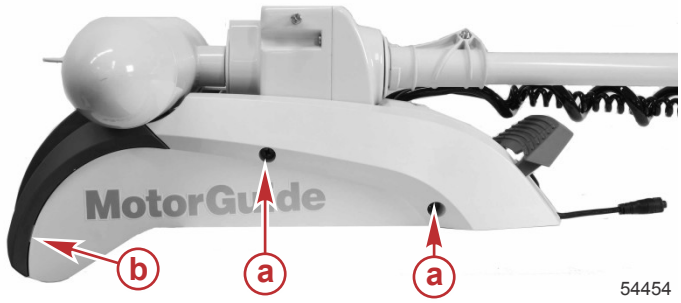
IMPORTANT: Perform this procedure with the trolling motor securely mounted to a suitable work surface.

Removal

⚠ WARNING

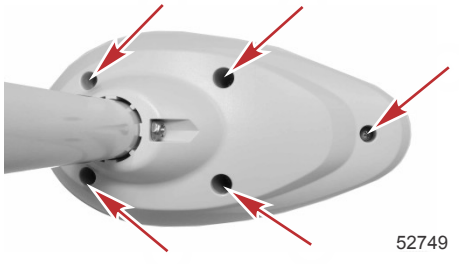
Performing service or maintenance without first disconnecting the battery can cause product damage, personal injury, or death due to fire, explosion, electrical shock, or unexpected motor starting. Always disconnect the battery cables from the battery before maintaining, servicing, installing, or removing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

1. Ensure that the trolling motor is disconnected from its battery or power supply.
2. Move the trolling motor into the stowed position.
3. Remove the two screws securing each side panel cover to the trolling motor. Remove both side panel covers, taking care not to damage the locating tabs.



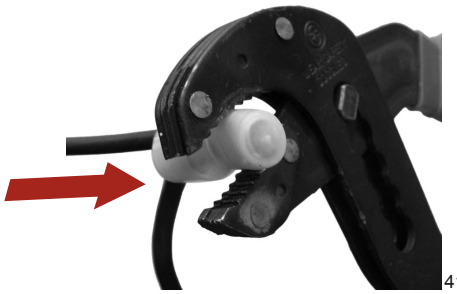
a - Side panel screws
b - Locating tab

4. Remove the five screws securing the top cover to the trolling motor head.



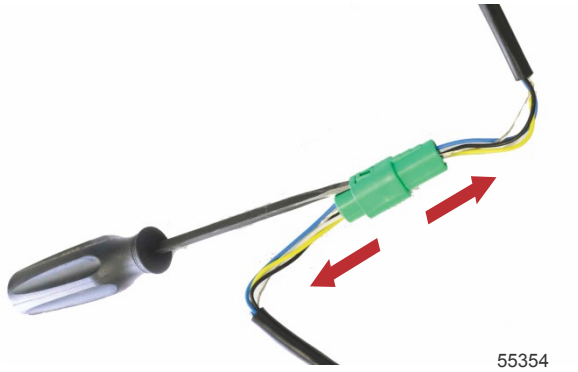
5. Label each wire located inside the trolling motor head.
6. Squeeze the wire connectors perpendicular to the crimp with pliers to release the wire connectors. Remove the wires from the wire connectors.

IMPORTANT: Do not cut the wires to remove the wire connectors. Cutting the wires could leave the wires too short to be reconnected.

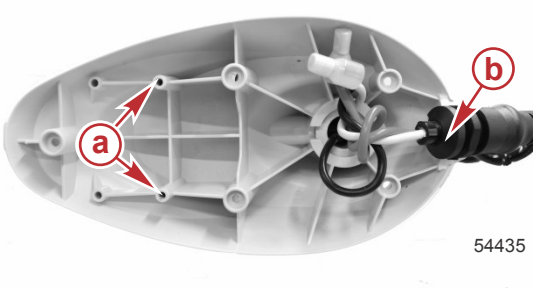


7. Insert a small screwdriver or pick into the slot on the sonar connector (if equipped), then gently pull the two connector halves apart. Do not pull on the wires.

   IMPORTANT: Do not pry on the sonar connector or damage to the connector will result.

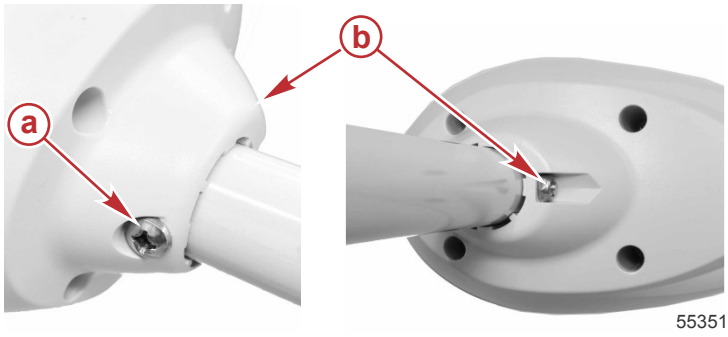


8. Remove the cable grommet from the trolling motor head.



a - GPS module mounting holes
b - Cable grommet

9. Remove the nut and bolt securing the trolling motor head to the column. Remove the trolling motor head from the column.



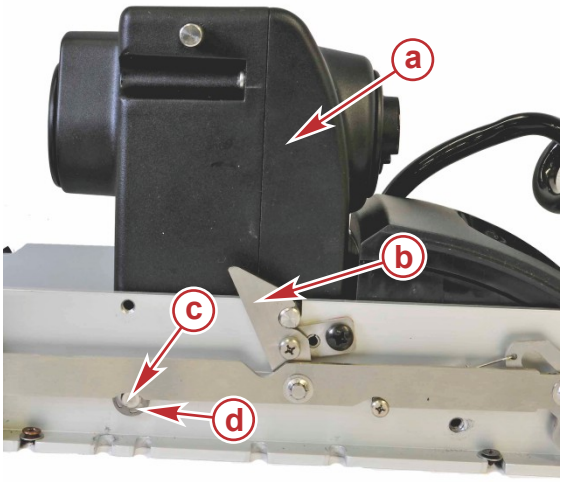
a - Bolt
b - Nut

10. Remove the depth collar by loosening the depth collar knob, then sliding the depth collar off the column.

11. Press and hold the stow/deploy release pedal, then slide the column and lower unit assembly out of the steering transmission. Store the column and lower unit assembly in a safe location.

a - Lower unit
b - Depth collar
c - Column
d - Curly cable
e - Stow/deploy release pedal
f - Deck mount

12. Remove the E-clips from both sides of the pivot shaft.
13. Use a brass drift and a hammer to drive the pivot shaft out of the steering transmission.
14. Press the stow/deploy release pedal to remove the steering transmission from the mount.

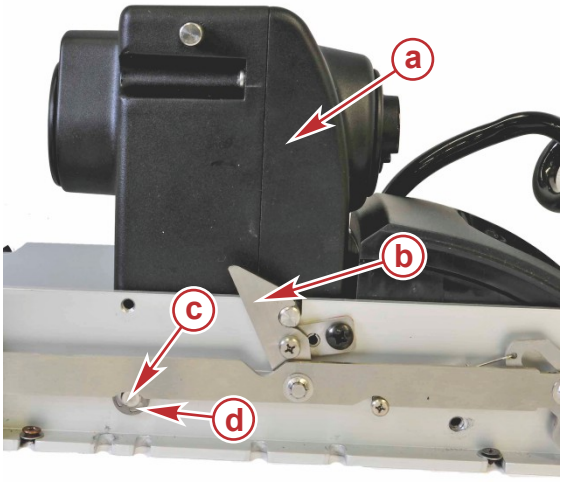


a - Steering transmission
b - Stow/deploy latch
c - Pivot shaft
d - E-clip

15. Remove the flanged bushings from the steering transmission housing.

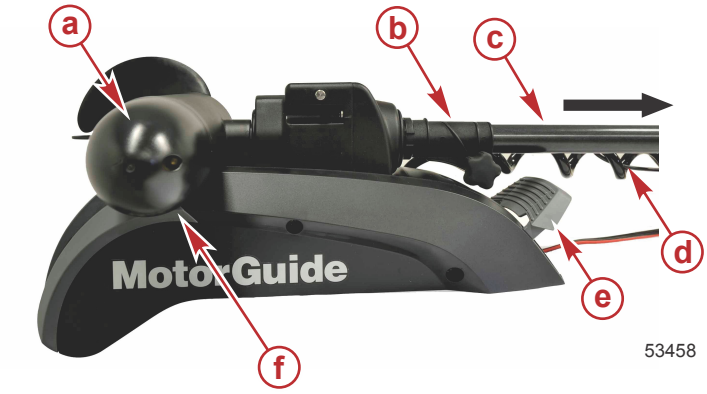
Installation

1. Install the flanged bushings into the steering transmission housing.
2. Press the stow/deploy release pedal, then install the steering transmission into the mount in the stowed position.
3. Use a brass drift and a hammer to drive the pivot shaft into the steering transmission.
4. Install the E-clips onto each side of the pivot shaft.



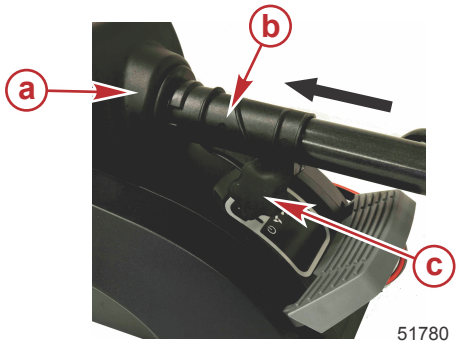
a - Steering transmission
b - Stow/deploy latch
c - Pivot shaft
d - E-clip

5. Press and hold the stow/deploy release pedal while sliding the column and lower unit assembly into the steering transmission until the lower unit rests on the deck mount.



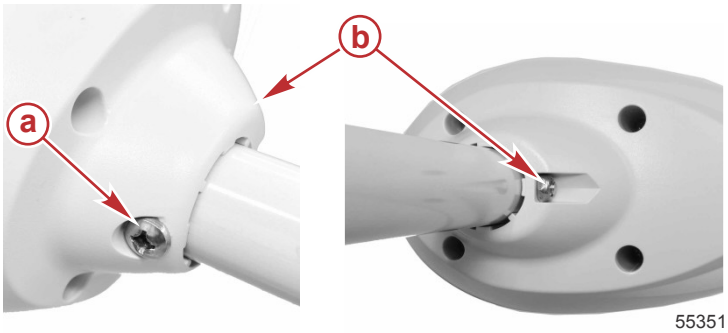
a - Lower unit
b - Depth collar
c - Column
d - Curly cable
e - Stow/deploy release pedal
f - Deck mount

6. Install the depth collar onto the column, then engage the depth collar with the column cap on the steering transmission. Tighten the depth collar knob.



a - Steering transmission
b - Depth collar
c - Depth collar knob

7. Install the trolling motor head onto the column. Install the nut and bolt, then tighten the bolt to the specified torque.



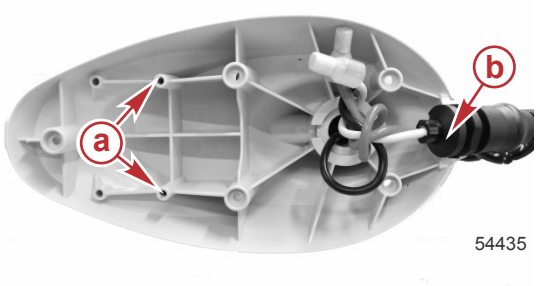
a - 1/4-20 x 2.0 in. bolt
b - Nylock nut

Description	Nm	lb-in.	lb-ft
1/4-20 x 2.0 in. bolt	3.9	35	–

8. Connect the sonar connector halves (if equipped) and place the connector into the trolling motor head.
9. Connect the wires inside the trolling motor head with large crimp connectors.
   - Red to red
   - Black to white

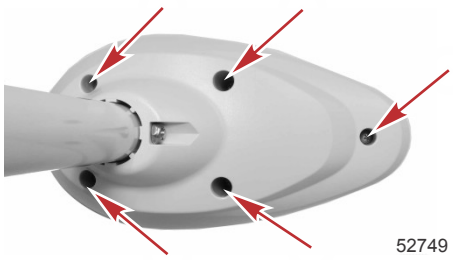
   Refer to the wire labels placed on the wires in the disassembly procedure to verify your connections.

10. Insert the cable grommet into the lower half of the trolling motor head.



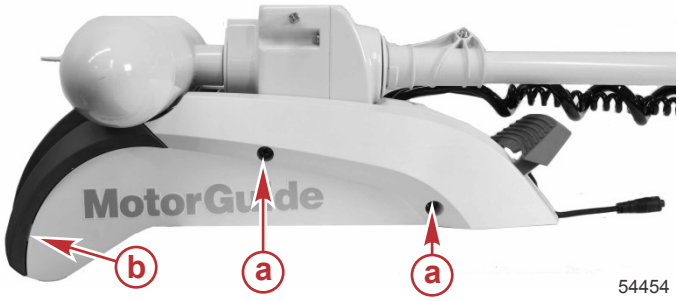
a - GPS module mounting holes
b - Cable grommet

11. Install the top cover onto the trolling motor head and secure it with five #8 x 0.625 in. screws. Ensure that no wires are pinched before tightening the screws to specified torque.



Description	Nm	lb-in.	lb-ft
#8 x 0.625 in. screws (5)	1.5	13.5	–

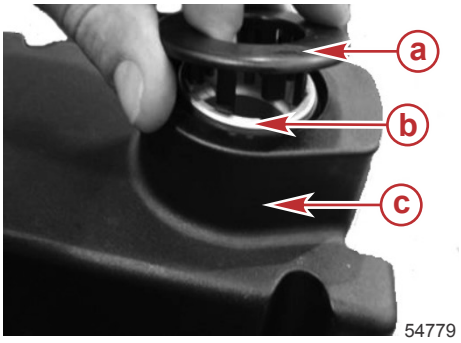
12. Install the side panel covers onto the trolling motor and secure them with two screws.



a - Side panel screws
b - Locating tab

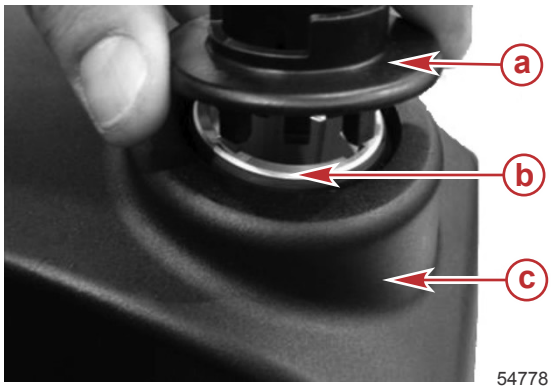
Steering Transmission Disassembly

1. Remove the steering transmission from the trolling motor. Refer to **Steering Transmission Removal and Installation** in this section.
2. Remove the lower column cap from the column extrusion.



a - Lower column cap
b - Column extrusion
c - Lower transmission casting

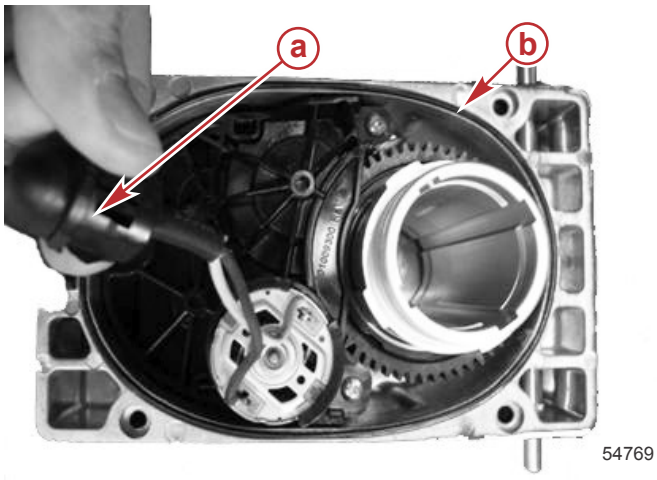
3. Remove the top column cap from the column extrusion.



a - Top column cap
b - Column extrusion
c - Upper transmission casting

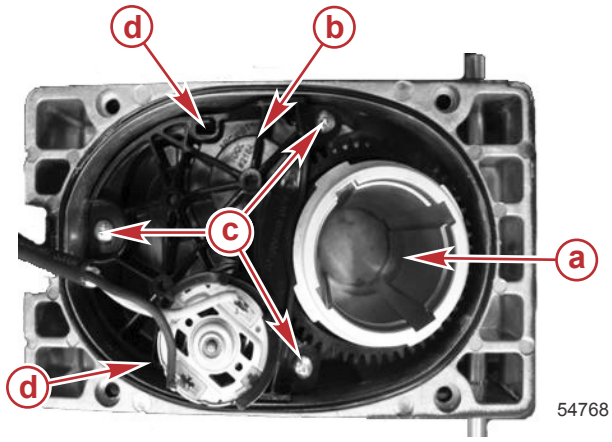
4. Remove the four screws securing the upper and lower transmission castings.

5. Separate the upper and lower transmission castings, then remove the strain relief clip from the lower transmission casting.



a - Strain relief clip
b - O-ring

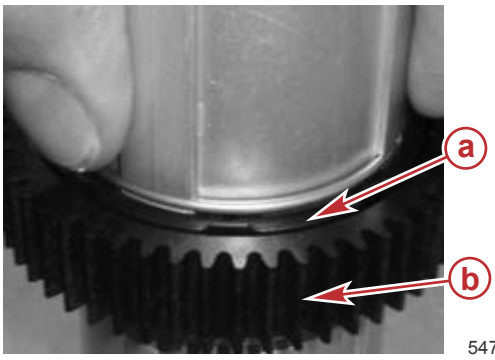
6. Remove the three mounting screws that secure the upper gearcase into the transmission. Squeeze the locking tabs inward and lift up to remove the upper gearcase and steering motor as an assembly, then lift the column extrusion out of the transmission.



54768

- **a -** Column extrusion assembly
- **b -** Upper gearcase
- **c -** #6-31 x 0.31 in. mounting screws (3)
- **d -** Locking tabs

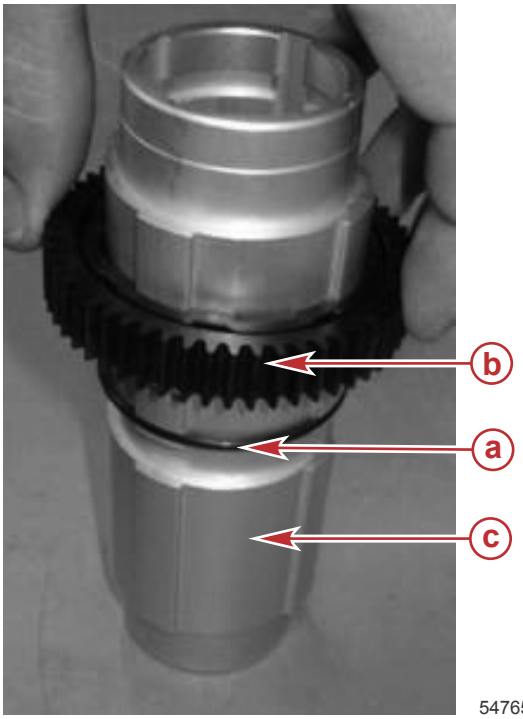
7. Remove the transmission casting O-ring from the lower transmission casting.
8. Remove the retaining ring from the slot in the column extrusion.



54767

- **a -** Retaining ring
- **b -** Gear 5

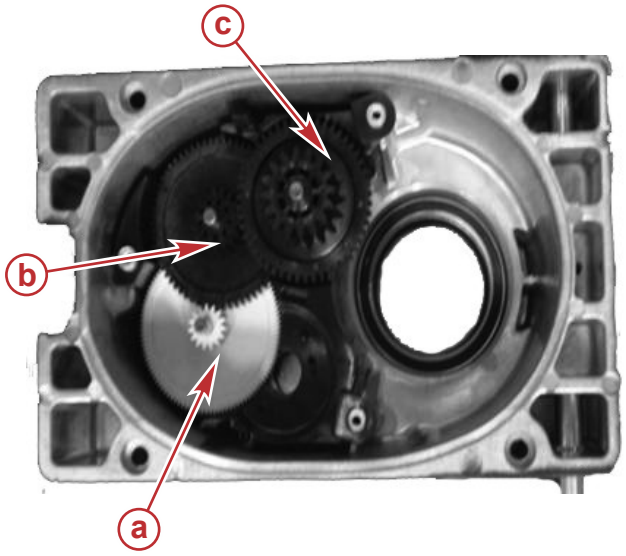
9. Remove gear 5 from the column extrusion. Remove the O-ring from the column extrusion.



54765

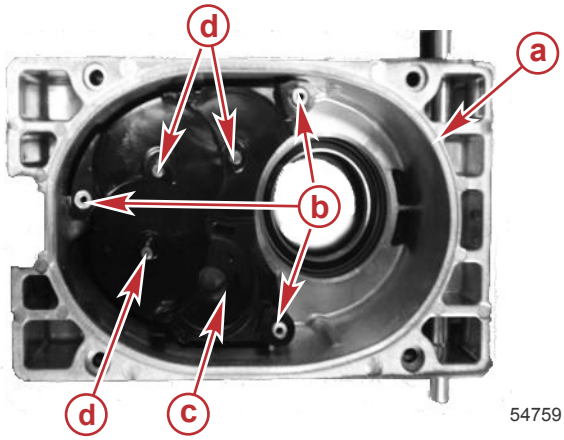
- **a -** O-ring
- **b -** Gear 5
- **c -** Column extrusion

10. Remove gear 2, gear 3, and gear 4 from the dowel pins.



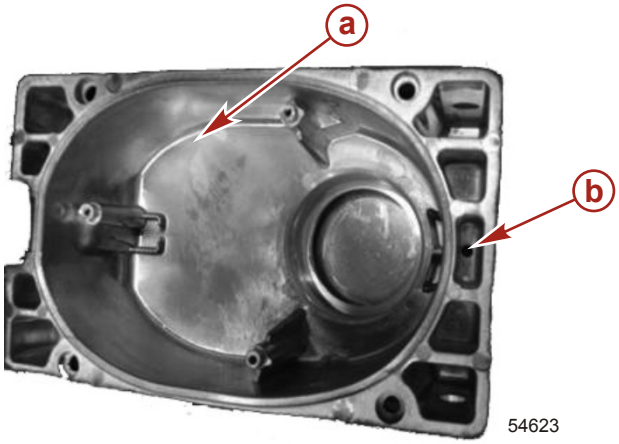
a - Gear 2
b - Gear 3
c - Gear 4

11. Remove the three dowel pins from the lower gearcase. Remove the three screws securing the lower gearcase into the lower transmission casting.



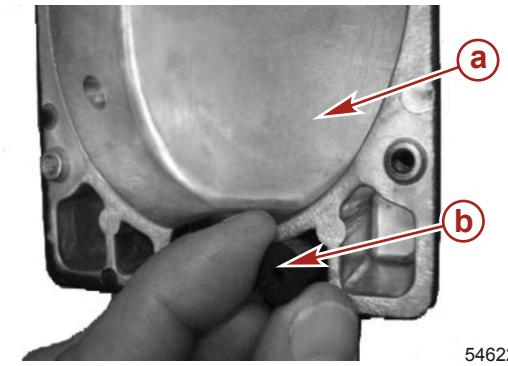
a - Lower transmission casting
b - Screws (3) (removed)
c - Lower gearcase
d - Dowel pins

12. Remove the bearings from the upper and lower transmission castings with an appropriately sized bearing race driver (obtain locally).
13. Remove the set screw from the upper transmission casting.



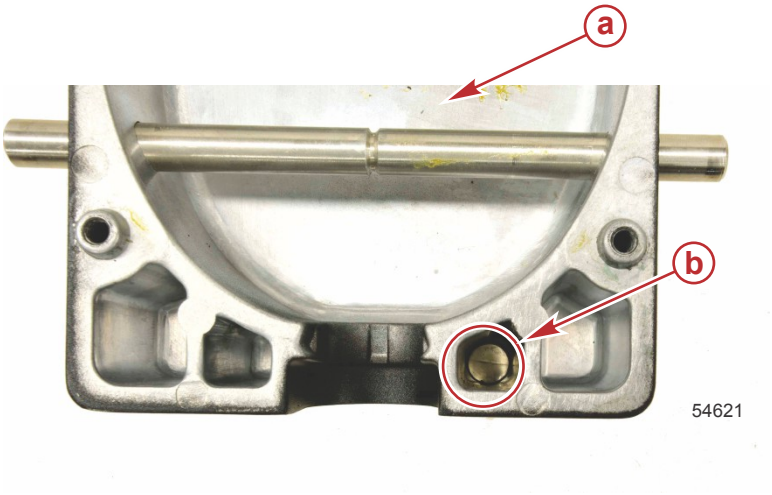
a - Upper transmission casting
b - Set screw (10-32 x 0.375 in.)

14. Remove the rubber stopper from the upper transmission casting, if replacing the upper transmission casting.



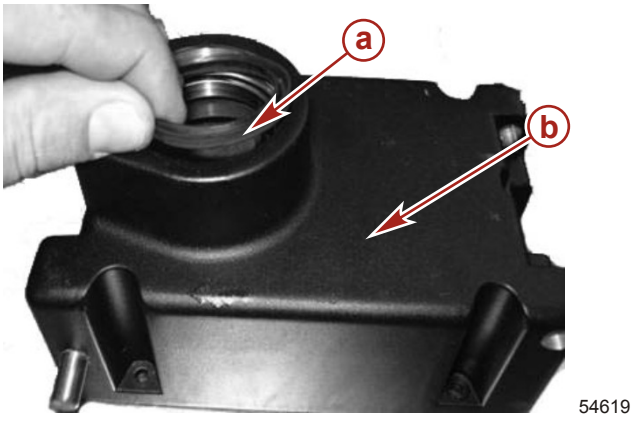
a - Upper transmission casting
b - Rubber stopper

15. Remove the magnet from the slot where the rubber stopper was removed, if replacing the upper transmission casting.



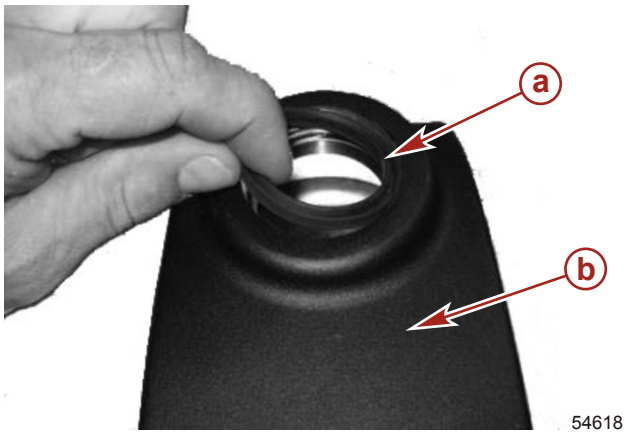
a - Upper transmission casting
b - Magnet

16. Remove the U-cup seal from the lower transmission casting.



a - U-cup seal
b - Lower transmission casting

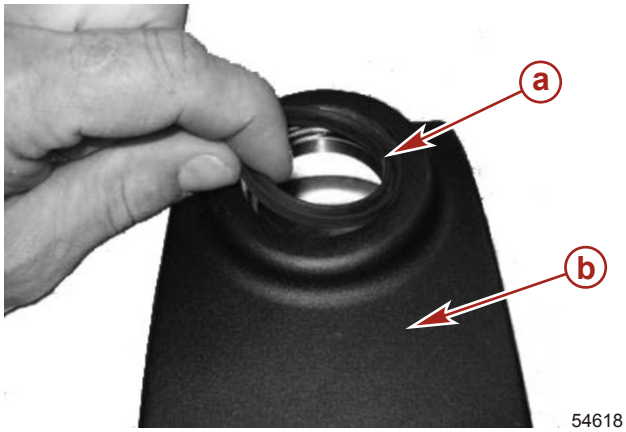
17. Remove the U-cup seal from the upper transmission casting.



a - U-cup seal
b - Upper transmission casting

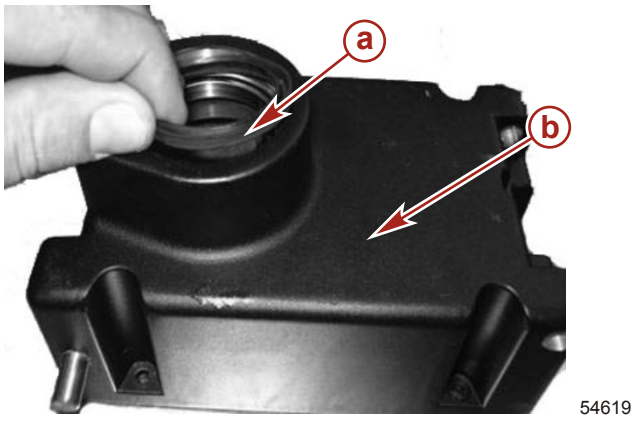
Steering Transmission Assembly

1. Install the U-cup seal into the upper transmission casting, with the cup of the seal facing upwards. Ensure that the top edge of the seal is under the lip of the casting.



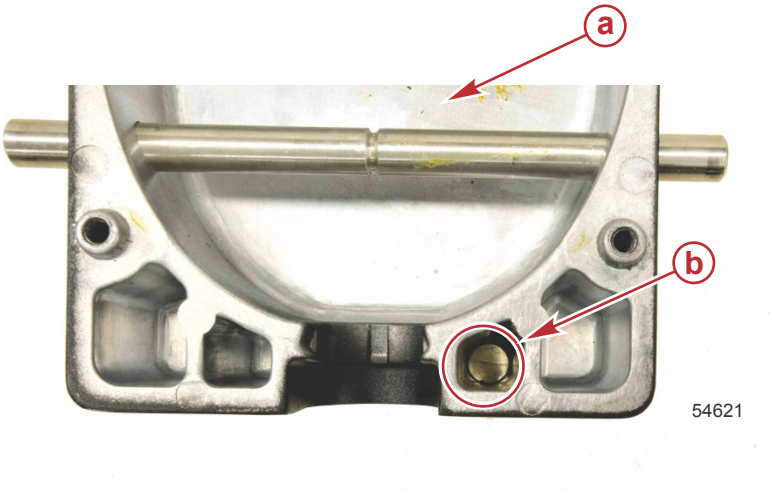
a - U-cup seal
b - Upper transmission casting

2. Install the U-cup seal into the lower transmission casting, with the cup of the seal facing upwards. Ensure that the top edge of the seal is under the lip of the casting.



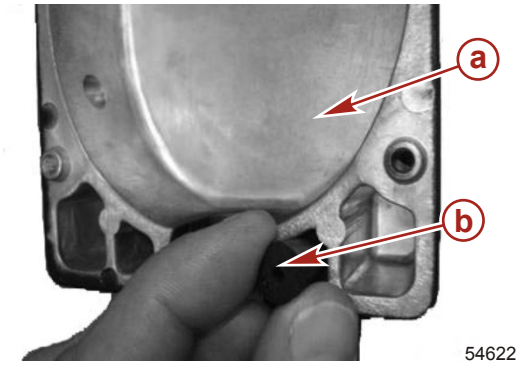
a - U-cup seal
b - Lower transmission casting

3. Place one magnet into the slot in the upper transmission casting, with the magnet in the horizontal position.



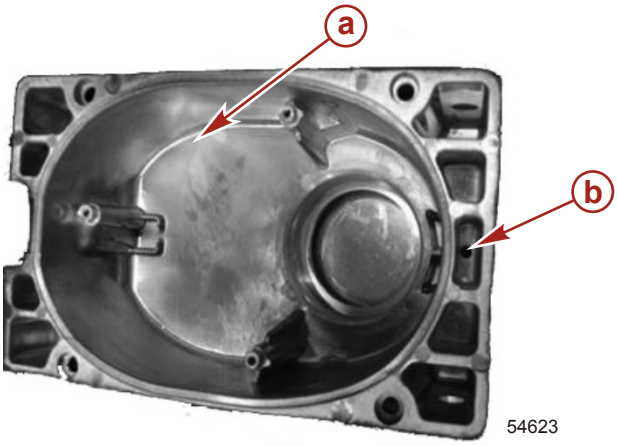
a - Upper transmission casting
b - Magnet

4. Install a rubber stopper on top of the magnet to secure the magnet in place. Press the stopper into the upper transmission casting until it seats on top of the magnet.



a - Upper transmission casting
b - Rubber stopper

5. Apply Loctite 290 onto the 10-32 x 0.375 in. set screw threads. Install the set screw into the upper transmission casting as shown. Tighten the set screw to the specified torque.

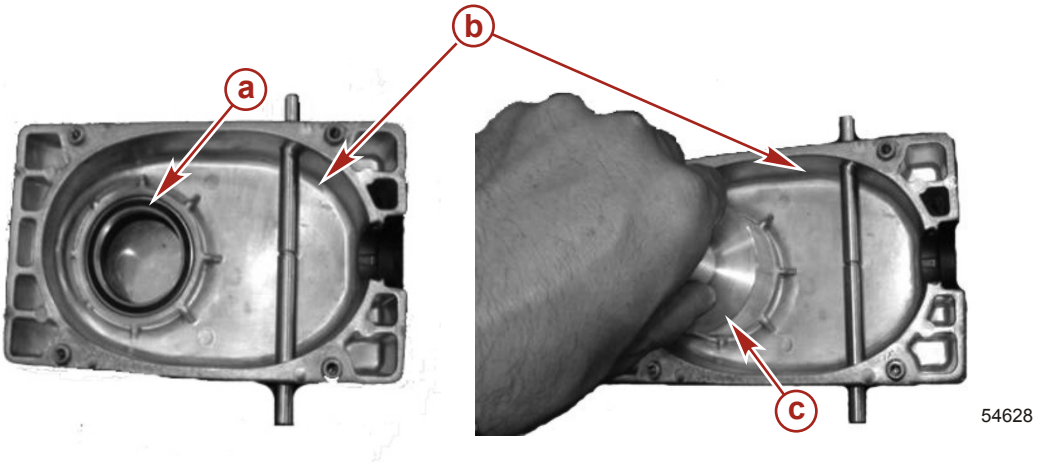


a - Upper transmission casting
b - 10-32 x 0.375 in. set screw

Tube Ref No.	Description	Where Used	Part No.
67	Loctite 290	Set screw threads	Obtain Locally

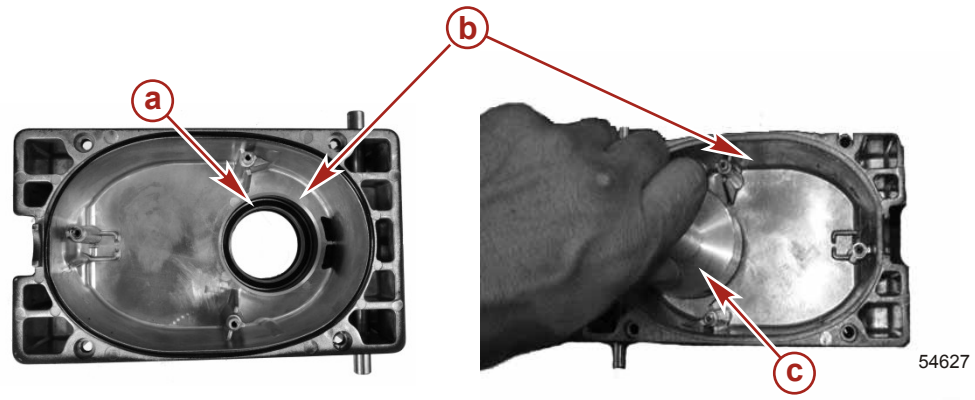
Description	Nm	lb-in.	lb-ft
10-32 x 0.375 in. set screw	2.2	20	–

6. Place a bearing into the upper transmission casting as shown. Use an appropriately sized bearing installation tool (obtain locally) to fully seat the bearing into the casting (installation tool flush with the casting).



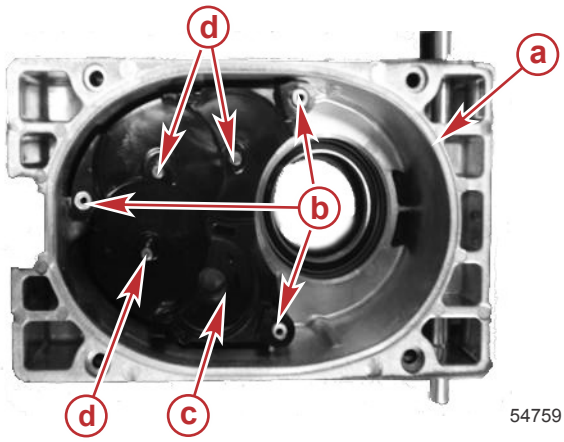
a - Bearing
b - Upper transmission casting
c - Installation tool

7. Place a bearing into the lower transmission casting as shown. Use an appropriately sized bearing installation tool (obtain locally) to fully seat the bearing into the casting.



a - Bearing
b - Lower transmission casting
c - Installation tool

8. Install the lower gearcase into the lower transmission casting, locating it onto the three screw bosses.
9. Install three dowel pins into the lower gearcase as shown.
10. Apply a thin film of 2-4-C with PTFE to the entire length of all three dowel pins.



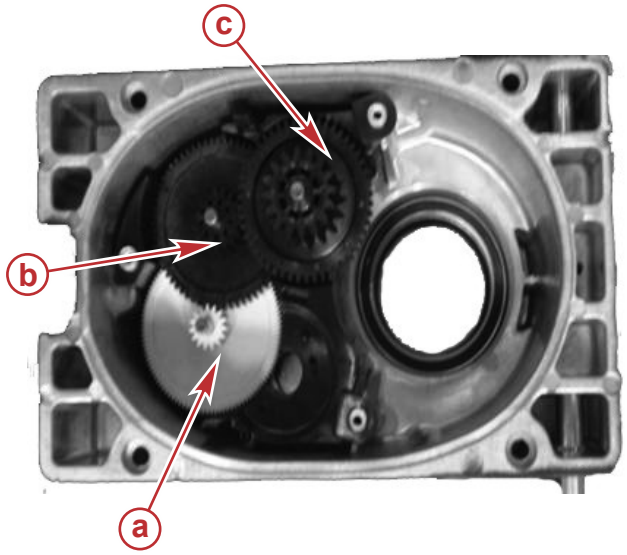
a - Lower transmission casting
b - Screw bosses (3)
c - Lower gearcase
d - Dowel pins (3)

Tube Ref No.	Description	Where Used	Part No.
95	2-4-C with PTFE	Entire length of all three dowel pins	92-802859A 1

11. Apply a thin film of 2-4-C with PTFE to the outer diameter of all three transmission gears.

Tube Ref No.	Description	Where Used	Part No.
95	2-4-C with PTFE	Outer diameter of all three transmission gears	92-802859A 1

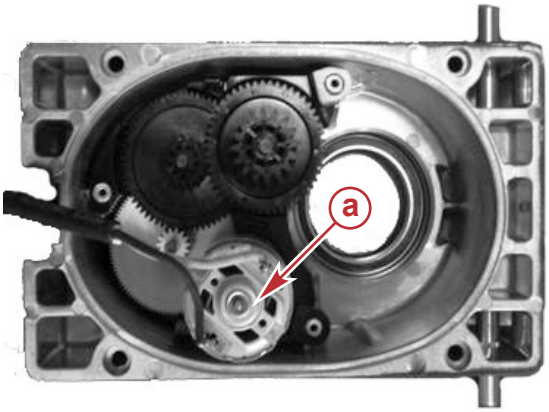
12. In the following order, install gear 2, gear 3, and gear 4 onto the dowel pins as shown.



54761

a - Gear 2
b - Gear 3
c - Gear 4

13. Press gear 1 onto the motor shaft, if it was removed.
14. Install the motor assembly into the lower gearcase. Ensure that the motor assembly is installed onto the locating pins in the lower gearcase.

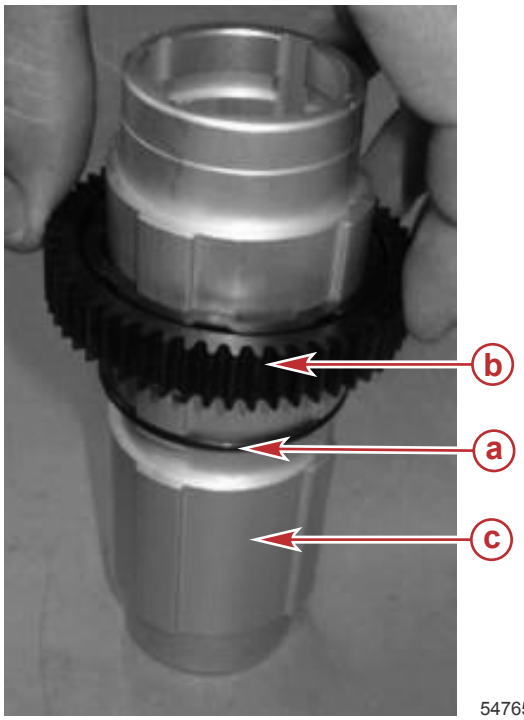


54763

a - Motor assembly

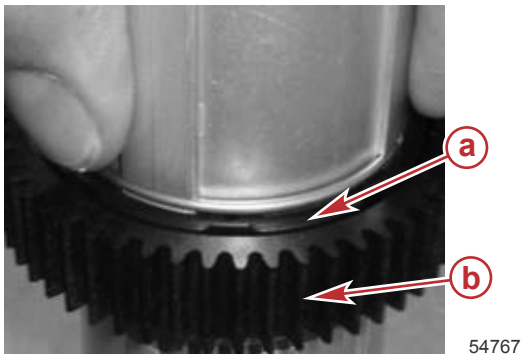
15. Install an O-ring into the second slot from the top of the column extrusion.

16. Install gear 5 onto the column extrusion.



a - O-ring
b - Gear 5
c - Column extrusion

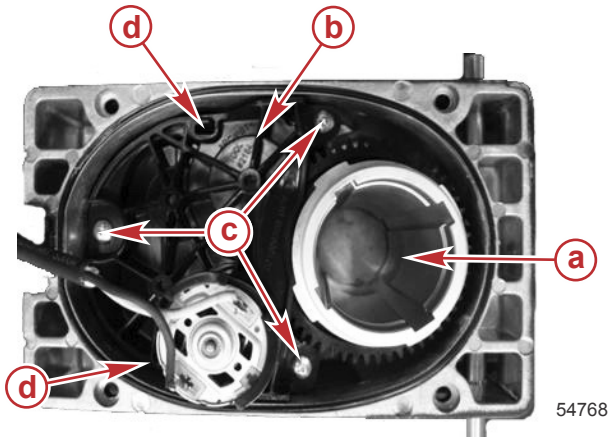
17. Install a retaining ring into the slot on the column extrusion above gear 5.



a - Retaining ring
b - Gear 5

18. Place the column extrusion assembly into the lower transmission casting with the retaining ring facing up.
19. Install the upper gearcase onto the dowel pins and screw bosses. Apply even, downward pressure until both locking tabs click.
20. Apply Loctite 277 onto the threads of the three #6-32 x 0.31 in. mounting screws. Tighten the mounting screws to the specified torque.

IMPORTANT: Do not overtighten the mounting screws or use power tools to tighten the mounting screws.



a - Column extrusion assembly
b - Upper gearcase
c - #6-31 x 0.31 in. mounting screws (3)
d - Locking tabs

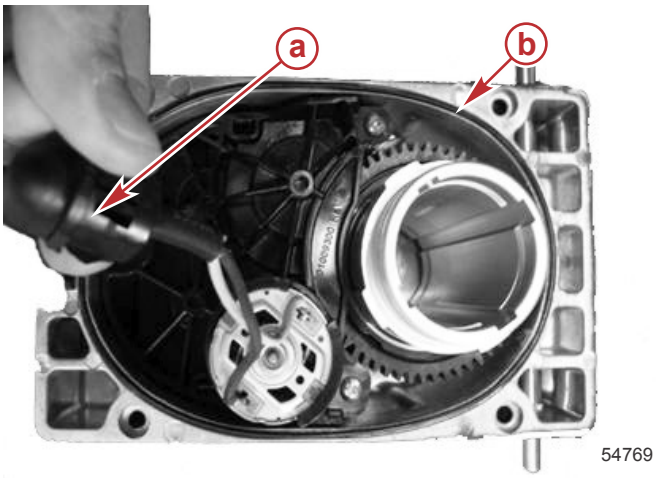
Tube Ref No.	Description	Where Used	Part No.
10	Loctite 277	Threads of the three mounting screws	Obtain Locally

Description	Nm	lb-in.	lb-ft
#6-32 x 0.31 in. mounting screws	0.6	5	–

21. Apply a thin film of 2-4-C with PTFE to the transmission casting O-ring. Install the O-ring into the groove in the transmission casting.

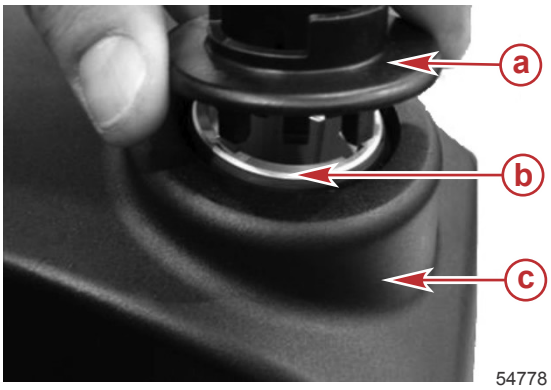
Tube Ref No.	Description	Where Used	Part No.
95	2-4-C with PTFE	Transmission casting O-ring	92-802859A 1

22. Install a strain relief clip onto the motor wires as shown, then press the strain relief clip together until you hear a click, indicating that the strain relief clip is fully seated.



a - Strain relief clip
b - O-ring

23. Insert the strain relief clip into the pocket on the transmission casting.
24. Place the upper transmission casting onto the lower transmission casting. Align the column extrusion with the upper transmission casting and gently press them together.
25. Press the top column cap into the column extrusion until you hear a click.



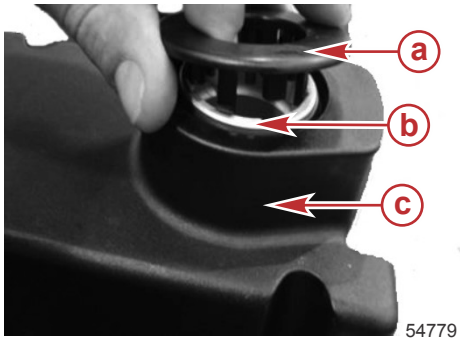
a - Top column cap
b - Column extrusion
c - Upper transmission casting

26. Hold the two halves of the transmission casting together. Turn the transmission assembly upside down as shown, then install the four 10-32 x 0.75 in. screws. Tighten the screws to the specified torque in the sequence shown.

Torque sequence for the steering transmission

Description	Nm	lb-in.	lb-ft
Transmission assembly screws (4) (10-32 x 0.75 in.)	3.4	30	–

27. Press the lower column cap into the column extrusion until you hear a click.



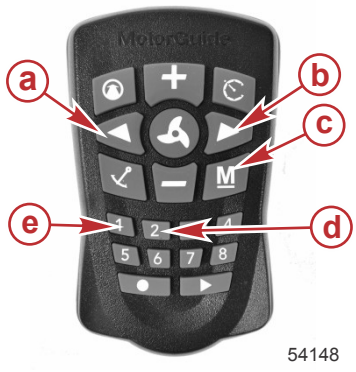
a - Lower column cap
b - Column extrusion
c - Lower transmission casting

28. Install the steering transmission onto the trolling motor. Refer to **Steering Transmission** in this section.
29. If the trolling motor is equipped with the Pinpoint GPS system, the mounting angle calibration procedure must be completed after installing the trolling motor onto the boat. Refer to **Mounting Angle and Compass Calibration** in this section.

Mounting Angle and Compass Calibration

Mounting Angle Calibration

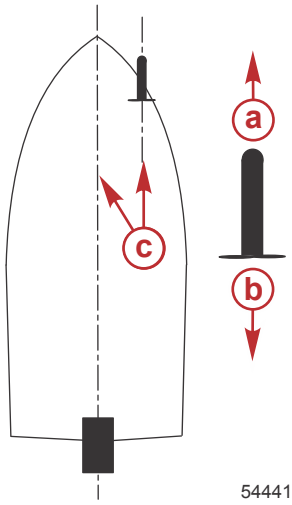
IMPORTANT: This calibration is required and is normally completed once when the GPS modules are installed. It should be repeated when the trolling motor is moved from one boat to another. This calibration can be done with the boat in or out of the water.



- **a -** Left turn
- **b -** Right turn
- **c -** Manual mode
- **d -** #2 button
- **e -** #1 button

IMPORTANT: A fixed GPS position is required to complete the mounting angle calibration. The Xi5 will emit an audible tune once it has acquired a fixed GPS position (in the default audio mode), and the GPS status indicator light will illuminate.

1. Power up and deploy the trolling motor. Adjust the motor height so that the motor is clear of any obstructions while turning.
   IMPORTANT: Stay a safe distance away from the propeller—the trolling motor is in an operational mode.
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.



View of boat from above

- **a -** Nose cone facing the bow
- **b -** Propeller facing the stern
- **c -** Parallel lines

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 tune, flash the status indicator light, and then return to manual mode, completing the mounting angle calibration.

Compass Calibration

IMPORTANT: This calibration is completed at the factory. It should only be repeated if the Pinpoint GPS system is not responding properly. This calibration must be done with the boat in the water, using the primary propulsion engine.

IMPORTANT: A fixed GPS position is required to complete the compass calibration. The Xi5 will emit an audible tune once it has acquired a fixed GPS position (in the default audio mode), and the GPS status indicator light will illuminate.

a - Manual mode
b - #1 button

1. Locate a suitable area clear of obstructions to navigation (both above and below the waterline) to perform the compass calibration.
2. Deploy the trolling motor. Verify that you are in a location where your 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 three ascending-tone beeps.
4. Use the primary propulsion engine to slowly drive the boat in two complete circles. The trolling motor will emit a tune when the compass calibration is complete.

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**.

Notes: