***NOTE:*** *The following applies to CE marked products only.*

## Trademark and Copyright Information

The description and specifications contained herein were in effect at the time this guide was approved for printing. Mercury Marine, whose policy is one of continuous improvement, reserves the right to discontinue models at any time, or to change specifications or designs, without notice and without incurring obligation.

Mercury Marine, Fond du Lac, Wisconsin, USA. Printed in USA.





## Welcome

You have selected one of the finest marine power packages available. It incorporates numerous design features to assure operating ease and durability.

With proper care and maintenance, you will thoroughly enjoy using this product for many boating seasons. This manual is a supplement to the owners manual provided with your engine, and provides additional information about the Axius Propulsion system. To ensure maximum performance and carefree use, we ask that you thoroughly read this manual. This Owners and Operator Manual contains specific instructions for using and maintaining your product.

Keep this manual with the product for ready reference whenever you are on the water.

Thank you for purchasing one of our products. We sincerely hope your boating will be pleasant!

## Warranty Message

The product you have purchased comes with a **limited warranty** from Mercury Marine or Cummins MerCruiser Diesel; the terms of the warranty are set forth in the Warranty Sections of the Operation, Maintenance and Warranty Manual included with your power package. The warranty statement contains a description of what is covered, what is not covered, the duration of coverage, how to best obtain warranty coverage, important disclaimers and limitations of damages and other related information. Please review this important information.

## Read This Manual Thoroughly

**IMPORTANT: If you do not understand any portion of this manual, contact your dealer for a demonstration of actual starting and operating procedures.**

## Notice

Throughout this publication, and on your power package, dangers, warnings, cautions, and notices, accompanied by the International Hazard Symbol ⚠, may be used to alert the installer/user 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 with these special instructions while performing the service, plus common sense operation, are major accident prevention measures.

| ⚠ DANGER |
| --- |
| **Indicates a hazardous situation which, if not avoided, will result in death or serious injury.** |

| ⚠ 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.** |

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**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.*

**⚠ WARNING**

**The operator (driver) is responsible for the correct and safe operation of the boat, the equipment aboard and the safety of all occupants aboard. We strongly recommend that the operator read this Operation, Maintenance and Warranty Manual and thoroughly understand the operational instructions for the power package and all related accessories before the boat is used.**

**⚠ WARNING**

**The engine exhaust from this product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.**

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## Section 1 - Getting to Know the Axius System



## Section 2 - On the Water



## Section 3 - Troubleshooting



## Section 4 - Customer Assistance Information

# Section 5 - Predelivery (PDI) and Customer Delivery (CDI) Checklists

# Section 1 - Getting to Know the Axius System

1

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# Features and Controls

## Instrumentation

### Propulsion Personality

The propulsion personality was developed by Mercury MerCruiser and your boat builder to ensure that vessel performance regarding joystick, steering, and autopilot work optimally for your vessel in ideal conditions. As conditions vary, such as wind and current, additional user input may be required to compensate.

Changing engine performance, gear ratios, or propeller may affect the performance of the joystick as well as the top speed of the vessel. Changing any parameter from the original factory equipment and settings can have a negative affect on performance, and changes should not be made without consulting the OEM and a MerCuiser product integration engineer first.

The vessel personality is the property of the OEM, and any changes or upgrades to the personality must be approved and distributed by the OEM. Mercury will assist with software personality changes only at the request of the boat manufacturer.

### VesselView (If Equipped)

The SmartCraft VesselView is the recommended information source for all drive information, engine information, fault codes, vessel information, basic navigation data, and system information.

Refer to the VesselView Operator's Manual for more information.


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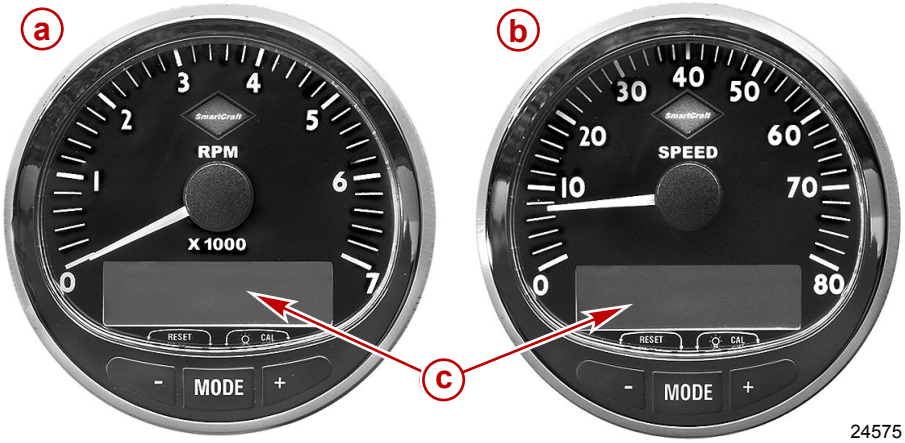
**VesselView**

### SC1000 and SC100 System Link Digital Gauges (If Equipped)

The SmartCraft SC1000 and SC100 digital gauges complement VesselView. Refer to the SC1000 and SC100 Digital Gauge Operator's Manual for more information.

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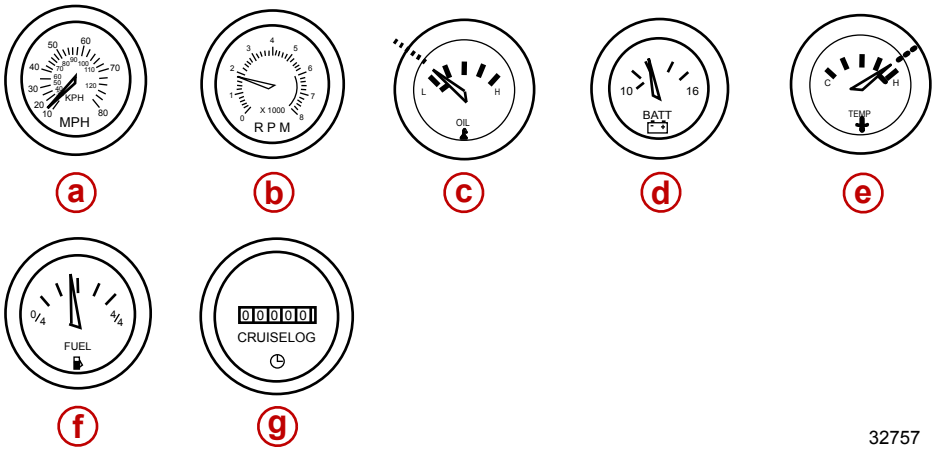
**Typical SmartCraft gauges**

- **a -** Tachometer
- **b -** Speedometer
- **c -** LCD System View display

## Analog Gauges (If Equipped)

Instrumentation packages may vary, and may contain additional gauges. The owner and operator should be familiar with all the instruments and their functions on the boat. Ask your boat dealer to explain the gauges and normal readings that appear on your boat.

Your package may include the following types of gauges may be included with your power package.




| Item | Gauge | Function |
|---|---|---|
| a | Speedometer | Indicates boat speed. |
| b | Tachometer | Indicates engine RPM. |
| c | Oil pressure gauge | Indicates engine oil pressure. |
| d | Voltmeter | Indicates battery voltage. |
| e | Water temperature gauge | Indicates engine operating temperature. |
| f | Fuel gauge | Indicates the quantity of fuel in tank. |
| g | Hour meter | Records engine operating time. |

# Electronic Helm Steering

The electronic helm steering operates through electronic signals. A computer-controlled electric motor simulates the resistance feedback found in hydraulic steering systems.

We recommend that you drive carefully until you have a chance to explore the Axius system's handling characteristics and boat's response in an open area clear of obstructions or other boat traffic. The electronic steering can provide a faster steering response than expected.

To confirm your steering range from lock to lock, ensure that the STBD key is on. The engines do not have to be running for this test. Steer hard to STBD until the wheel stops. This stop is electric and is driven by the electric motor attached to the steering wheel. Begin turning the wheel to port and count the number of turns until the wheel stops at the port lock in the full hard over position. This number of turns will result in your drives translating from full STBD (26 degrees) to full port (-26 degrees), with the center, straight ahead position being zero (0) degrees.

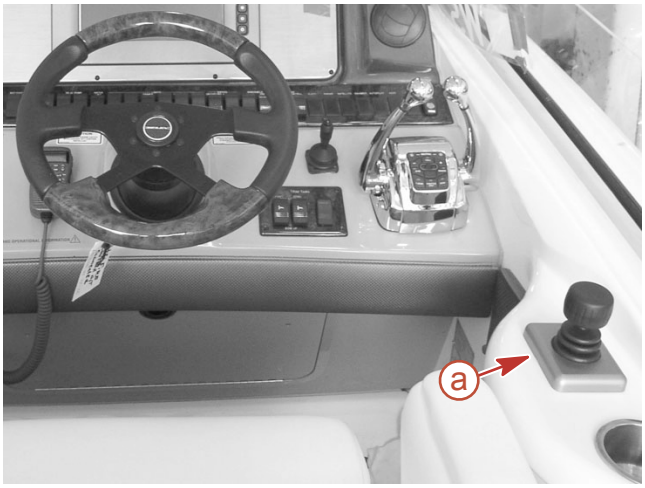
You may experience times where the electronic endstops of the wheel are **not** felt. This will not result in loss of steering. The drives will still stop when it reaches the hard over position at each lock. This state will happen during a STBD key off condition, a low STBD batt voltage, or a steering wheel motor fault.

## Electronic Helm Steering

Your vessel's personality, as developed by the vessel manufacturer in partnership with Mercury, determines the number of turns lock to lock. Typically, this is about 2 3/4 turns of the wheel from lock to lock, resulting in full STBD to full port steering angle. Boat models may vary based upon OEM request.

## Joystick—Basic Operation

The joystick offers intuitive control of your boat during low speed and docking maneuvers. Engine speed is limited from idle to approximately 1700-2500 RPM in this mode, depending on vessel and propulsion application, to prevent excessive prop wash or unacceptable boat dynamics during maneuvers. DOCK mode reduces this upper range to approximately 1000-1200 RPM and will be discussed more in the DOCK mode section. This RPM range is mainly due to engine horsepower. The levers must be used for vessel maneuvering if environmental conditions require more thrust than the range listed above.




**Typical joystick location**
**a -** Joystick

Though joystick operation is easy and intuitive, you should avoid using it until you have the opportunity to become familiar with the vessel's handling characteristics while operating the vessel with the joystick in open water. Thereafter, you should occasionally practice operating without the joystick in case the joystick becomes inoperable.

Both engines must be running and both ERC levers must be in neutral for the joystick to operate.

## Engine Guardian Strategy

**IMPORTANT: Boat speed could be reduced to idle and may not respond to the throttle.**

Engine Guardian Strategy is designed to help reduce the potential for engine damage by reducing engine power when a potential problem is sensed by the ECM or SmartCraft system.

When the Guardian system detects a failure in the shift system or other abnormal condition, it will leave the shift actuator in the last known position. Thus, if you are in gear and there is a fault, you stay in gear. Pulling the lanyard, activating the E-stop switch, or turning the key to the off position and restarting the engine will result in the gear position returning to Neutral.

This allows you to still maneuver the vessel in a forward gear and still get to port.

It is always wise to be cognizant of your surroundings when starting or shifting the vessel.

Engine Guardian monitors:

- Oil pressure
- Coolant temperature
- Seawater pressure
- Engine overspeed
- Exhaust Manifold Temperature (8.2 models without Emissions Control, and all models with Emissions Control)

Should Engine Guardian engage on your vessel, your SmartCraft instrumentation will indicate this and advise you to reduce throttle if necessary. Engine Guardian may also reduce throttle for you if the situation requires it.

To avoid a possible recurrence of the problem you should contact an authorized dealer. The ECM stores the fault and with this information the technician will be able to more rapidly diagnose problems.

# Axius Premier Features (If Equipped)

## Axius Premier Precision Pilot Trackpad Functions

The Axius Premier System is a fully integrated system utilizing a GPS sensor, an optional boat manufacturer or customer-supplied NMEA-0183–compatible chart-plotter, an inertial measurement unit (IMU), VesselView, and the Axius Premier trackpad provided with the system. No aftermarket autopilot is necessary.

**⚠ WARNING**

**Avoid serious injury from collision with other boats, running aground, or striking objects in the water. Always maintain a diligent lookout while the boat is operating in any Precision Pilot mode. The Precision Pilot system cannot react to avoid other boats, shallow water, or objects in the water.**

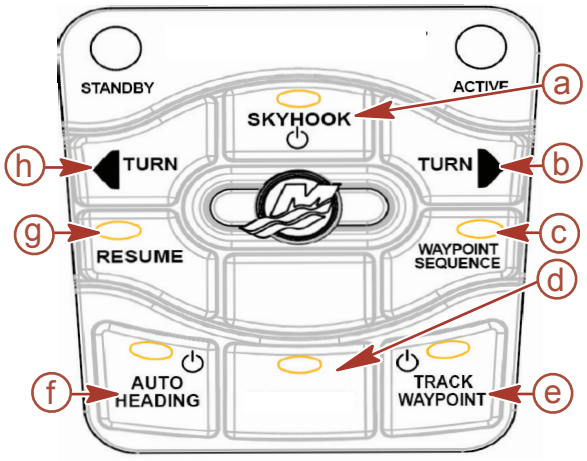
Axius Premier requires the following:

- CAN based navigational information from a GPS unit
- An approved NMEA0183 equipped chartplotter
- CAN based navigational information from an inertial measurement unit (IMU)
- Mercury CAN based Autopilot trackPad
- VesselView

The Axius Premier Precision Pilot trackpad gives the operator control over the following features:

- **Skyhook**—allows the boat to hold its position without lines or anchor

  ***NOTE:*** *The Skyhook feature is available pending boat manufacturer personality configuration. Some boat manufacturers do not enable Skyhook from the factory. Other boats have external notification devices (installed and manufactured by the boat builder) indicating the vessel is in Skyhook.*
- **Auto Heading**—Steers the boat on a fixed compass heading
- **Track Waypoint**—Automatically pilots the boat on a predetermined route from the chart plotter or GPS unit. This can be a single waypoint, or a series of waypoints assembled into a route. If following a route, at each waypoint transition, the system will sound an alarm, which must be acknowledged before the boat will proceed to the next waypoint.
- **Waypoint Sequence**—This feature is similar to Track Waypoint, except the system will sound an alarm upon arriving at a waypoint and transition automatically to the next waypoint on the route.

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**a -** Skyhook
**b -** Turn to starboard
**c -** Waypoint Sequence
**d -** Not used
**e -** Track Waypoint
**f -** Auto Heading
**g -** Resume
**h -** Turn to port

The buttons on the Precision Pilot trackpad have the following functions:

| Function | Description |
|---|---|
| **Skyhook** | Engages and disengages Skyhook. Mode is only available when the joystick is centered, both engines are running, G.P.S. and heading sensors are available, and the levers are in neutral. If the vessel is drifting when Skyhook is enabled, the Skyhook light will flash until the boat slows itself down, then become solid when Skyhook is set. For example, if you are drifting forward and press Skyhook, the drives will go to reverse to slow the vessel. You may still drift forward. When the boat slows its self down, it will enable Skyhook. Skyhook will not activate if the boat is underway. |
| **Turn < and >** | Each press of the button causes a 10 degree course change in auto heading. Holding the joystick port or starboard (until the beep) initiates a one degree change in course. It affects no other autopilot features. |
| **Waypoint Sequence** | Engages Waypoint Sequence, driving the boat on a course set with multiple waypoints on the chartplotter. The waypoints must be on a route. See the chartplotter owners manual. Waypoint Sequence is available when the "WAYPOINT SEQUENCE" button is pressed, and data (a NMEA-0183 stream) is available from a chart plotter, and the GPS and heading sensor signals are available. Waypoint sequence will follow a route automatically, announcing arrival at each waypoint and then turning towards the next waypoint. Track Waypoint must be enabled first then select Waypoint Sequence. |
| **Track Waypoint** | Route Tracking is available when data (NMEA0183 stream) is available from a chart plotter, GPS, and heading sensor signals are available. The boat will attempt to steer to a waypoint or a route from the chartplotter. Arrival at the waypoint must be acknowledged before the vessel will proceed to the next waypoint along the route. |
| **Auto Heading** | Engages Auto Heading mode, which will hold the boat on a fixed course at the speed that the operator chooses. Heading control is available when the "Auto Heading" button is pressed, GPS and IMU signals are available. (See "Turn < and >" for course adjustment information.) A chartplotter not needed for this feature. |
| **Resume** | Resumes previous Auto Heading course if the boat's direction has not been changed 90° or more. |

***NOTE:*** *Moving the steering wheel will always take control of the boat. A slight detent will have to be overcome to give the operator feedback that the they are taking control from the Precision Pilot. Changing gears using the electronic remote control (ERC) lever will also disable the autopilot mode.*

# Section 2 - On the Water

## Table of Contents

# Getting Started

## Traditional Maneuvering with Steering and Thrust

You can maneuver your Axius-equipped vessel much like a traditional sterndrive boat. However, the Axius drive system expands the maneuvering capability of your vessel at both slow and planing speeds. At slow speeds, the drive system is capable of directing the thrust through independently articulating drives to produce more responsive turning of the vessel. The Axius drive system features counter-rotating propellers that do not produce any propsteer when accelerating or slowing down.

### To Maneuver the Boat in Forward or Reverse

Place one or both engines in forward or reverse gear and steer with the steering wheel as you would any comparable boat.

### To Steer the Boat in Tight Turns at Low Speeds

- To turn the boat in tight turns at low speeds, turn the wheel in the direction of the turn.
- To increase the turn rate of the boat after the wheel is completely turned, you may increase the power to the inside drive.

### To Spin the Boat at Low Speeds

- Turn the drives to straight forward.
- To spin to the right, place the starboard engine in reverse and the port engine in forward.
- To spin to the left, place the port engine in reverse and the starboard engine in forward.
- To increase the rate of turn, simultaneously adjust each ERC lever for more throttle. More reverse throttle will be needed to compensate for the forward drive.

## Maneuvering After Engine or Module Failure

If an engine, helm, or steering module stops functioning during use, the remaining drive is electronically limited while turning inboard. This limit is to remove the possibility of the drives making contact with each other, since the active drive is unable to determine the position of the disabled drive. The boat is still operational, but maneuverability is decreased when turning toward the side that is not working. Refer to the inboard drive angle limit in the table below. The drive is still capable of turning through its full range when turning away from the disabled drive. Use extra caution when one of the drives is disabled.

### Drive limits of engine with module failure

| Engines, with and without Emissions Control | Maximum Inboard Drive Angle Limit |
|---|---|
| 5.0L, 350 MAG, 377 MAG models | 3.0 Degrees |
| 8.2L models | 11.5 Degrees |

The limit may be greater than specified in the table depending on the propulsion personality and distance between drives.

## Maneuvering with the Joystick

**⚠ WARNING**

**A spinning propeller, a moving boat, or any solid device attached to the boat can cause serious injury or death to swimmers. Stop the engine immediately whenever anyone in the water is near your boat.**

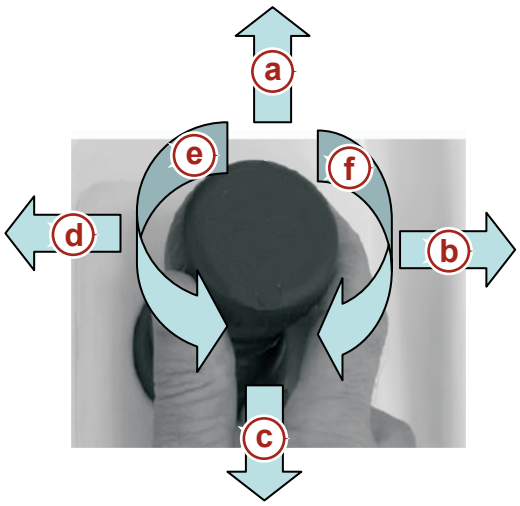
The joystick provides a single lever interface to maneuver the vessel. Operating the vessel with the joystick is well suited for close quarter and docking operations in most situations. The computer control system automatically calculates the steering angle of each drive, the throttle level, and the proper gear to push or rotate the boat in a direction corresponding to a joystick movement or twist. For example, if you move the joystick sideways, the computer control system applies a thrust to the boat in the sideways direction. Rotating the joystick prompts the computer to create forces that rotate the boat around its center. You can move and rotate the joystick at the same time, allowing intricate movements in tight quarters.

The joystick is proportional, which means that the greater distance from the center that the joystick is moved, the more thrust that is applied to the boat in that direction, to move the boat.

For joystick movement of the boat:

1. Both engines must be running for the joystick to operate.
2. For best control, trim both drives to the full down position. VesselView will display a reminder when the joystick is initiated.
3. Move both electronic remote control (ERC) levers to the neutral position.
4. Move the joystick in the direction that you want the boat to move, or twist the joystick in the direction that you want the boat to rotate. The joystick can be moved and rotated at the same time.

The following picture gives a limited example of the basic responses to inputs from the joystick, and should be used for reference only. The pictures show an approximate correlation between joystick inputs and the corresponding movement of the vessel. Exact maneuvers will require multiple joystick inputs and additional user corrections to maintain the maneuver over time.

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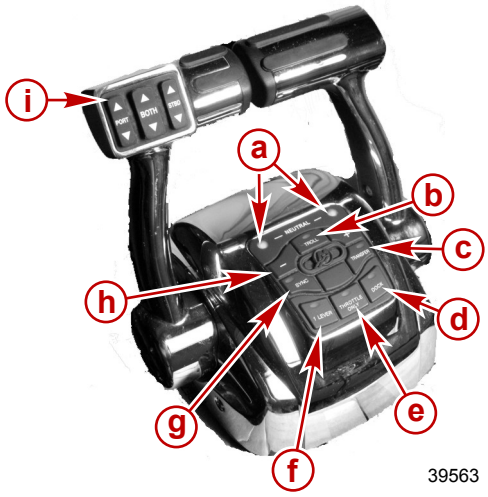
- **a -** Forward
- **b -** Starboard
- **c -** Reverse
- **d -** Port
- **e -** Port yaw
- **f -** Starboard yaw

## Special Digital Throttle and Shift (DTS) Features

The DTS system features several alternate operational modes for the Electronic Remote Control (ERC) levers. Any of the listed features can operate simultaneously.

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**ERC levers with DTS touchpad, Typical**

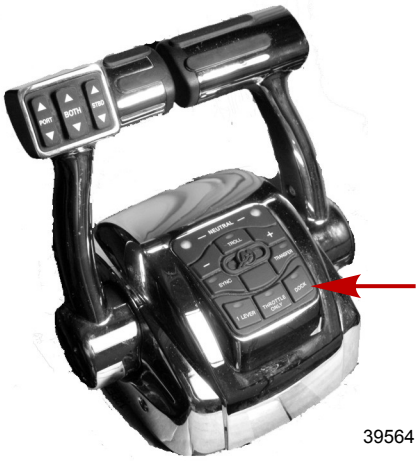
| Item | Control | Function |
|---|---|---|
| a | "NEUTRAL" lights | Illuminate when the drive is in the neutral gear position. The lights flash when the engine is in throttle only mode. |
| b | "TROLL" | Allows the boat operator to set the engine speed for slow speed trolling or maneuvering. RPM will be limited from idle to approximately 700-1200 rpm. |
| c | "TRANSFER" | Allows boat control to be transferred to a different helm. Refer to Helm Transfer. |
| d | "DOCK" | Reduces throttle capacity to approximately 50% of normal throttle. |
| e | "THROTTLE ONLY" | Allows the boat operator to increase engine RPM for warm-up without shifting the transmission into gear. |
| f | "1 LEVER" | Enables the throttle and shift functions of both engines to be controlled by the port lever. |
| g | "SYNC" | Turns off or on the auto-synchronization feature. Refer to Synchronizing Engines. |

| Item | Control | Function |
|---|---|---|
| h | "+" (increase) and "–" (decrease) | Increases and decreases settings for TROLL. |
| i | Trim controls | Raises and lowers the drives for best efficiency, or for conditions like shallow water, trailering, etc.. |

***NOTE:*** *Not all functions may be active.*

## Dock

Dock mode reduces the RPM throughout the range by 50%. Dock mode also reduces available power when the joystick is enabled, allowing finer control of engine power in close quarter situations.




**"DOCK" button**

To engage Dock mode:

1. Place both ERC levers to any detent.
2. Press the "DOCK" button located on the DTS Touchpad attached to the ERC levers.
3. The "DOCK" button light turns on.
4. Place either ERC lever into gear.
5. The engines raise the RPM at a proportionally lower RPM for the ERC lever position, and with half the usually available power.

To disengage Dock mode:

1. Bring both ERC levers to any detent.
2. Press the "DOCK" button. The "DOCK" button light turns off.

## Throttle Only

***NOTE:*** *The joystick can become active if it is moved any time the engines are running and the ERC levers are in neutral position. Throttle Only mode should be used to disable the joystick if the captain is not in command at the helm. Placing the ERC in Throttle Only will avoid unintended gear engagement. The drives will turn using the steering wheel or joystick and the RPM of the engines can be increased while in the throttle only mode, but the drives remain in neutral.*


**"THROTTLE ONLY" button**

To engage Throttle Only mode:

1. Place both ERC levers in neutral.
2. Press the "THROTTLE ONLY" button, located on the DTS touchpad.
3. The "THROTTLE ONLY" button light illuminates and the neutral lights blink.
4. Place either ERC lever into gear. The warning horn will beep each time the levers are moved in and out of gear while in Throttle Only, but the drives will remain in neutral.
5. The RPM of the engines can be increased, while the drives remain in Neutral.
6. Throttle Only mode also affects the joystic. The drives will steer and the engines will rev, but the drives will remail in neutral.

***NOTE:*** *Pressing the "THROTTLE ONLY" button while the ERC levers are in gear, turns off the button light, but the boat remains in throttle only mode until you place the levers in neutral.*

To disengage throttle only mode:

1. Bring both ERC levers to neutral. Throttle only will not disengage unless the ERC levers are in neutral.
2. Press the "THROTTLE ONLY" button. The "THROTTLE ONLY" button light turns off.
3. The neutral lights stop flashing and go solid, and the joystick becomes active.

## 1 (Single) Lever

The Axius system features the ability to command both engines with a single lever. This feature simplifies engine management during rough sea conditions by allowing you to grasp a single lever to command both engines simultaneously. It has no affect on Joystick function. It is not the same as the system feature called Sync.


**"1 LEVER" button**

To engage 1 (single) lever mode:

1. Place both ERC levers in neutral.
2. Press the "1 LEVER" button located on the DTS Touchpad attached to the ERC levers.
3. The "1 LEVER" button lights.
4. Place the starboard ERC lever into gear.
5. The engine RPM raises and lowers simultaneously while the drives remain in the same gear.

To disengage 1 (single) lever mode:

1. Place both ERC levers in neutral.
2. Press the "1 LEVER" button. The "1 LEVER" button light turns off.

## Sync

The Axius system features Sync, an automatic engine synchronization feature, which enables automatically at key-up. Sync monitors the position of both ERC levers. If both levers are within 10% of one another, the port engine synchronizes to the starboard engine's RPM. The SmartCraft system will automatically disengage Sync at the last 95% of throttle position range to allow each engine the ability to reach maximum available RPM. Sync cannot engage until its minimum RPM is met.

The indicator light on the "SYNC" button is on when both engines are on. The light is yellow when the engines are not being synced, at idle and 95% of throttle. The light turns red when the sync feature is working.


**"SYNC" button**

The RPM display of VesselView also shows an orange icon under the RPM numbers if the engines exceed a 10% difference in RPM of each other, and the icon turns red when they synchronize.

To disengage Sync mode:

1. Place the ERC levers in any detent.
2. Press the "SYNC" button.

To re-engage Sync mode, press the "SYNC" button.

### Troll

***NOTE:*** *The joystick is not active when Troll is active since Troll requires the ERC levers to be in detent gear to be active.*

Pressing the "TROLL" button activates troll control. The troll control feature allows the boat operator to set the engine speed for slow speed cruising or maneuvering.

To engage Troll mode:

1. Move the control handles into forward detent and press the "TROLL" button.
2. Use the - or + buttons to decrease or increase speed, up to a maximum of 1000 RPM.
3. If Troll control is set at a desired speed and then shut off, the system remembers the set speed and will return to that speed when reengaged.

To disengage Troll mode, either:

- Press the "TROLL" button
- Move the throttle to a different speed.
- Or shift the engine into neutral.

### Transfer (If equipped with dual helms)

The "TRANSFER" button allows the boat operator to transfer control of the boat from the active helm to the inactive helm on boats equipped with dual helms. Refer to **Dual Helm Station Transfer**.

# Axius Premier (If Equipped)

## Chartplotter Requirements

Many of the features of Axius Premier use information from the chartplotter to function. However, not every chartplotter has the quality of information needed to allow these features to work properly. The chartplotter on your boat has been selected from an approved list created and maintained by Mercury MerCruiser. These chartplotters use specific software to meet the stringent demands to function with the Axius Premier system.

Poor quality or inaccurate information generated by unapproved chartplotters or software can cause the features to behave erratically, unexpectedly, or not function at all. Updating software to an unapproved version can also cause the system to not function correctly. See your dealer or call Mercury Customer Service for approved plotters, plotter settings, and compatible software in the event your chartplotter needs service.

## Axius Premier Trackpad Features

### General Information

The following list provides some general information about the Axius Premier trackpad.

- Axius Premier functions are controlled through the Axius trackpad only, and are displayed on VesselView.
- All other Axius Premier trackpad screens appear on VesselView.
- Pressing any button on VesselView dismisses the Axius Premier CAN trackpad screen from the VesselView screen, unless the screen was chosen from the VesselView environment menu.

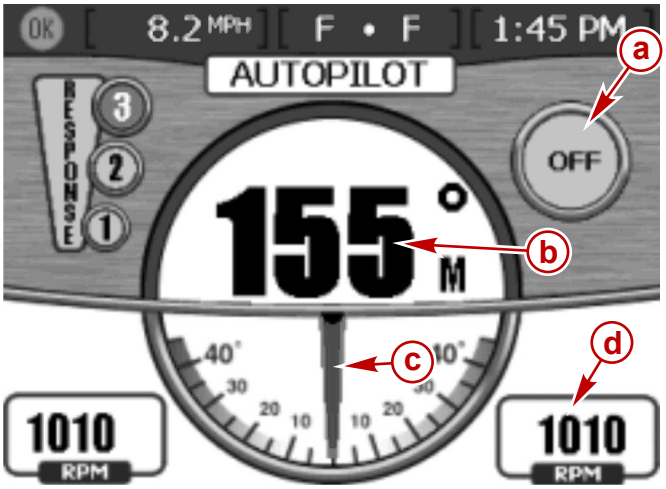
The following information shows the location and explains the function of the Axius trackpad lights and buttons.

### Standby

When Axius Premier is in Standby mode, the following information is shown on the VesselView:

- In Standby mode, the display shows a digital compass value and the angle of the drives.
- The compass value is the actual current heading from the Axius Inertial Measurement Unit (IMU).

- On the right side of the screen, an icon labeled "OFF" indicates that Axius Premier is not engaged.

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**Standby screen on VesselView**

**a -** "OFF" icon
**b -** Heading
**c -** Drive angle reference
**d -** Engine RPM

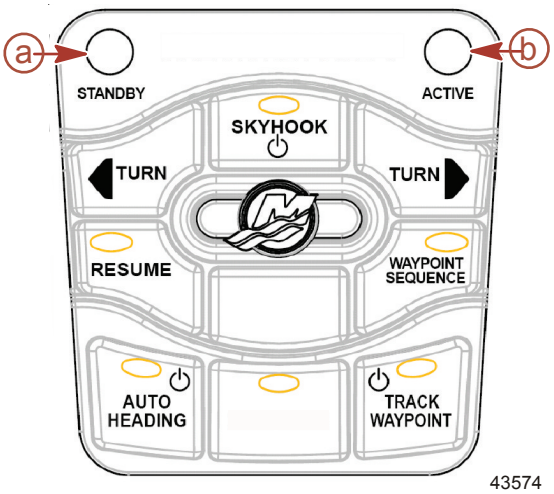
## Standby and Active Lights

The Axius Premier trackpad is off when the "STANDBY" light is illuminated. You must press a button to activate a mode.

The "ACTIVE" light is illuminated when one mode of Axius Premier is on.

If the "STANDBY" light is off or blinking while nothing is "ACTIVE," check for the following:

- A problem with the GPS or the IMU.
- The steering wheel endstops have been exceeded or lost.
- A fault has been set that will not allow autopilot.




43574

**a -** "STANDBY" light
**b -** "ACTIVE" light

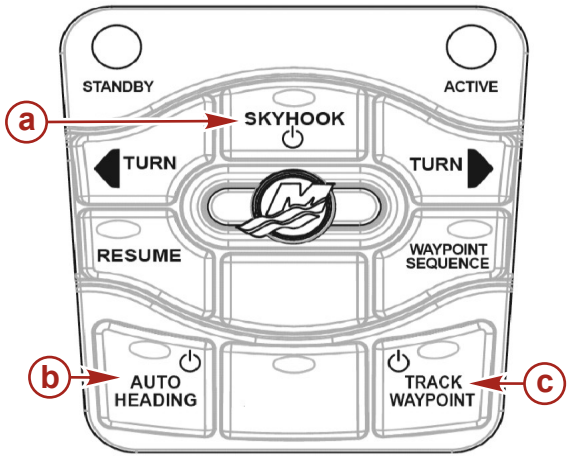
## Power Icon

The power icon ⏻ indicates a button that engages or disengages the Axius Premier trackpad function indicated on the button. Only one function can be on at a time.

If you press a button that has the power icon ⏻ when that button light is on, the light turns off for that button and the "STANDBY" light illuminates.

If you press a button with the power icon ⏻ when that button light is off, the light turns on for that button, a single beep sounds, and the "ACTIVE" light illuminates.

If a button is pushed and a double beep is heard, the feature is not available at this time due to vessel personality, faults, vessel state, speed, gear position, or another feature is active, or GPS signal is not available.



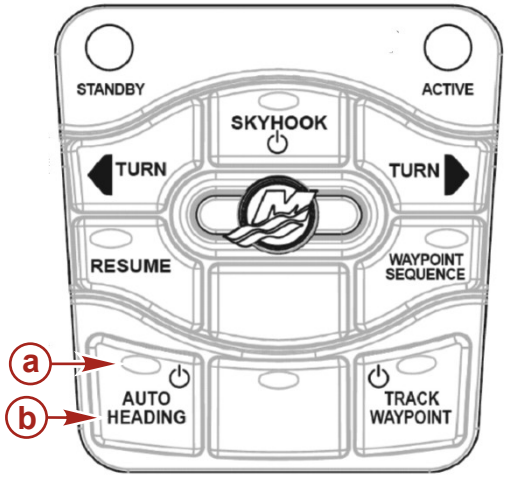

43575

**Buttons with power icons**

- **a -** "SKYHOOK" button
- **b -** "AUTO HEADING" button
- **c -** "TRACK WAYPOINT" button

## Auto Heading

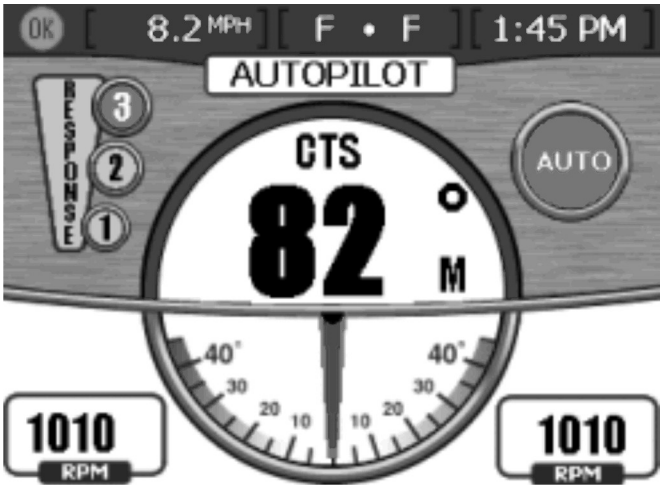
1. Both engines must be running for Auto Heading mode to function.
2. Press the "AUTO HEADING" button to engage. The button illuminates and one beep sounds. Two beeps will sound if auto heading does not engage.




43576

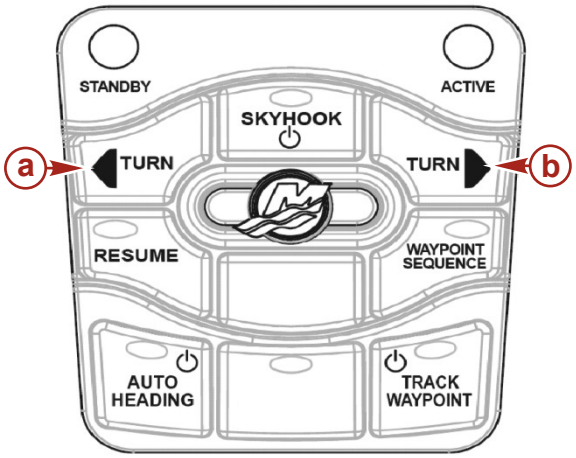
- **a -** Button light
- **b -** "AUTO HEADING" button

3. Axius will hold the current compass heading the boat is following when the "AUTO HEADING" button is pressed. When in Auto Heading mode, VesselView will show "CTS" (Course to Steer), and the steering indicators will indicate the position of the drives being controlled by the autopilot. The CTS will not represent the actual heading of the vessel, but the course it is attempting to steer.




31409

4. To adjust the heading while auto heading is active and the button light is on, press the "TURN" button on the trackpad or deflect and hold the joystick in the direction of the desired course adjustment until a beep is heard.
5. To make a turn:
   - Press one of the "TURN" buttons in the direction you want to turn. Each press of the button changes the desired heading by 10°.




43578

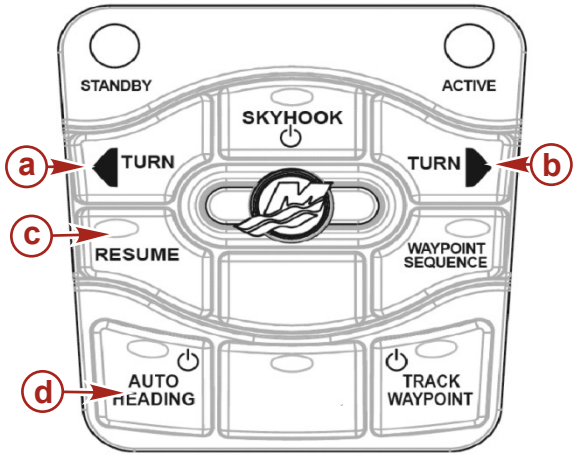
a - Port "TURN" button
b - Starboard "TURN" button

- Deflect and hold the joystick in the direction you want to turn left (port) or right (starboard) until a beep is heard, and this will adjust your course by 1°.

24707

**Adjusting the heading to starboard (port is the opposite)**

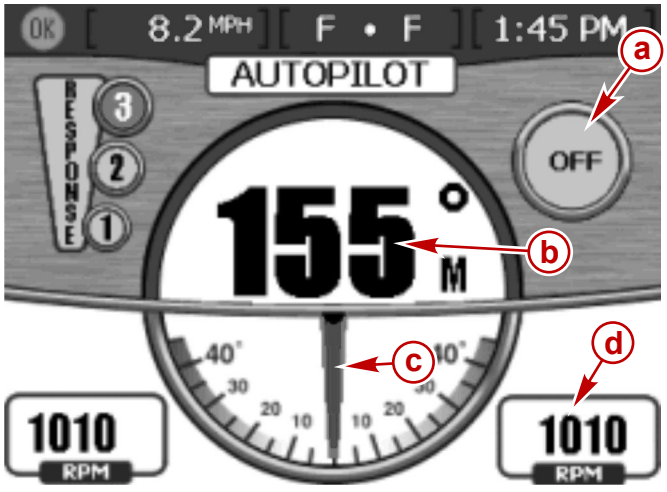
6. To disengage Auto Heading mode, turn the steering wheel or press the "AUTO HEADING" button. A single beep sounds when it disengages. If the steering wheel is used to disengage auto heading, the "RESUME" button LED turns on and a single beep sounds. While the LED is lit, you can press the "RESUME" button to resume auto heading on the last heading entered.




43579

**a -** Port "TURN" button
**b -** Starboard "TURN" button
**c -** "RESUME" button
**d -** "AUTO HEADING" button

7. If the ERC handles are moved to neutral, auto heading turns off, a single beep sounds, and the "STANDBY" light turns on. You cannot resume your course by pressing the "RESUME" button.




31408

**a -** "OFF" button
**b -** Current heading
**c -** Drive positions
**d -** Engine RPM

***NOTE:*** *If you press the "AUTO HEADING" button a second time, the Axius goes to standby mode and all lights other than "STANDBY" turn off.*

## Heading Adjustment and Override

When Auto Heading mode is engaged, the steering wheel is locked into a detent. Approximately 3.6–4.5 kg (8–10 lb.) of force are required to overcome this detent. Manually overcoming the steering wheel's detent puts Axius into Standby mode and restores control to the steering wheel.

1. When auto heading is engaged, the "TURN" buttons provide a 10° course correction for each press to the port or starboard.
2. The joystick provides a 1° course correction for each press to the port or starboard, after a beep sounds.

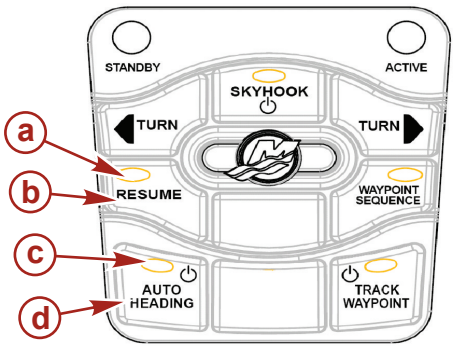
Pressing the "AUTO HEADING" button causes VesselView to displays the "AUTO HEADING" screen. If the VesselView "AUTO HEADING" screen does not appear, the "AUTO HEADING" screen needs to be activated in VesselView calibration.

***NOTE:*** *If you press the "AUTO HEADING" button a second time, the Axius goes to standby mode and all lights other than "STANDBY" turn off.*

## Disengaging Auto Heading

1. Disengage "AUTO HEADING" mode by any of the following actions:
   - Place the ERC levers for both engines in neutral. The "RESUME" button LED turns on and a single beep sounds.
   - Turn the steering wheel beyond the detent. The "RESUME" button LED turns on and a single beep sounds.

     ***NOTE:*** *The operator will not have control of the steering until the steering wheel is moved beyond the detent.*
   - Press the "AUTO HEADING" button on the Axius trackpad. The "AUTO HEADING" button LED light turns off. A single beep sounds. This turns off Auto Heading mode, and the resume function is not available.




46102

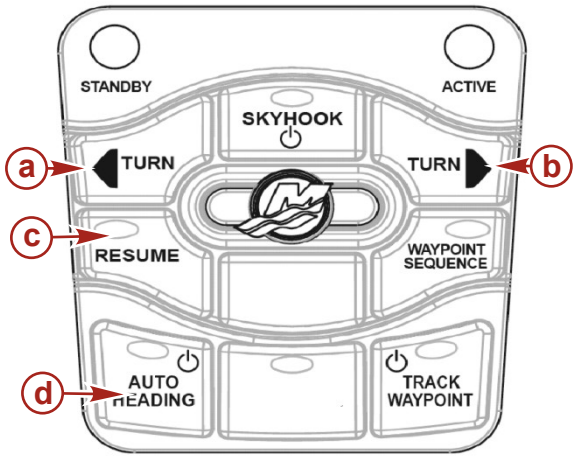
**a -** Resume indicator light
**b -** "RESUME" button
**c -** Auto heading indicator light
**d -** "AUTO HEADING" button

## To Resume to a Heading

The "RESUME" button light turns on when the previous course heading is available to resume. While the LED is lit, you can press the "RESUME" button to resume the last auto heading CTS.

***NOTE:*** *The previous heading can only be resumed within four minutes of Auto Heading mode being disengaged and if the boat has not turned more than 90°.*

If you disengaged the auto heading by turning the steering wheel or if you pressed one of the "TURN" buttons with auto heading still engaged, press the "RESUME" button to resume the previous heading.




43579

**a -** Port "TURN" button
**b -** Starboard "TURN" button
**c -** "RESUME" button
**d -** "AUTO HEADING" button

## Skyhook—Station Keeping (Optional)

The vessel may be equipped with the Skyhook Station Keeping feature. This system utilizes global positioning system technology (GPS) and an electronic compass to automatically control shifting, throttling, and steering to maintain heading and approximate position. This feature can be helpful when waiting for space near a fuel dock, waiting for bridges to open, or when the water is too deep for an anchor.

Skyhook does not maintain an exact fixed position, but rather will hold the vessel in a fixed compass heading within an area. The size of this area is affected by the accuracy of the GPS satellite system, the satellite signal quality, the physical position of the satellites relative to the receiver, solar flares and the proximity of the receiver on the vessel to large structures and trees.

Under typical operating conditions Skyhook is capable of holding the vessel within a radius of 10 meters (30 feet). However this distance may sometimes increase to a radius of 30 meters (100 feet). Do not engage Skyhook when the vessel is within 30 meters (100 foot) of any obstacle, obstruction, dock, bridge, vessel, swimmer, etc.

While in Skyhook, it is essential the captain remain at the helm prepared to take control of the vessel due to changing conditions such as:

- A swimmer or another vessel approaches your vessel.
- Skyhook loses the satellite signal and automatically disengages.
- The size of the area in which the vessel is being held increases.

Before engaging Skyhook, The captain should brief all passengers on how Skyhook operates. Direct them to stay out of the water, not to sit or stand where they could fall overboard, and to be alert for any sudden shifts in the vessel's position. Occasionally the Skyhook system may apply a brief surge in power to hold a position. If passengers are not prepared for this occurrence they may lose their balance and fall.

**⚠ WARNING**

**A rotating propeller, a moving boat, or a device attached to a moving boat can cause serious injury or death to people in the water. When Skyhook is engaged, the propellers rotate and the boat moves to maintain the position of the boat. Stop the engines immediately whenever anyone is in the water near the boat.**

Skyhook will not engage unless the joystick and control levers are in neutral. When Skyhook is engaged, the propellers turn but, the rotation may not be obvious. Ensure that no one is in the water near the vessel within 30 meters (100 feet) and the passengers are secure when the engines are running.

Before engaging Skyhook, brief all passengers on how Skyhook operates. Direct them to stay out of the water and off the swim platform, and to be alert for any sudden shifts in the vessel's position.

When Skyhook is engaged the captain must:

- Remain at the helm
- Watch closely for anyone in the water near the vessel
- Disengage Skyhook if anyone enters the water or approaches the vessel from the water
- Watch for approaching vessels and disengage Skyhook if any vessel is on an intercept course

Skyhook system response will change with wind and current conditions. Familiarize yourself with how best to position your vessel regarding the speed and direction of wind and current. When you place the bow into the wind, the Skyhook system response is smoother. Experiment to determine what works best for your vessel in various situations.

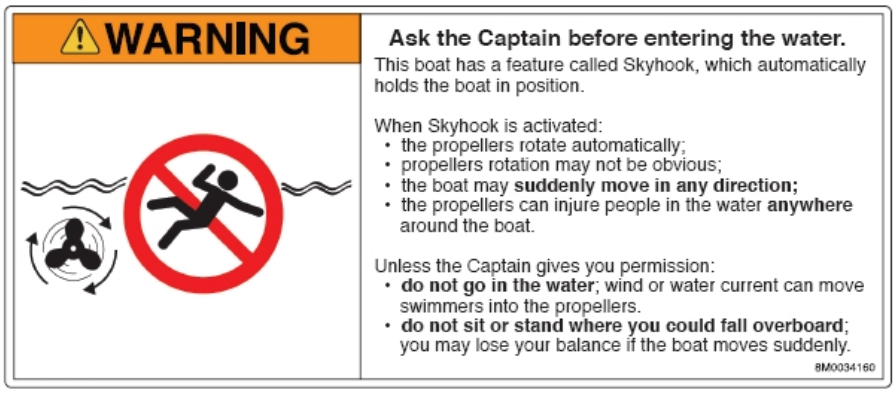
Occasionally the GPS signal may weaken or become temporarily unavailable. When this happens Skyhook will sound an alarm and automatically disengage. The drives will return to neutral and the vessel will drift with the wind and current. You must be ready to take control of the helm at all times.

**IMPORTANT: Activities in the water near the vessel while Skyhook is engaged may result in injury or death. The operator and passengers should read and observe the safety warning labels on the vessel before Skyhook is engaged.**

The following safety warning labels are located on the vessel for reference. Contact the engine manufacturer for replacement safety warning labels if they are missing, damaged, or cannot be read.


33798

**Label near the Precision Pilot trackpad**




33824

**Label in the vicinity of the transom boarding area**

***NOTE:*** *Properly place these labels before operating Skyhook. Contact your engine manufacturer for replacement labels.*

## Precision Pilot Modes

**⚠ WARNING**

**In some Precision Pilot modes—"Auto Heading," "Track Waypoint," and "Waypoint Sequence"—the boat navigates a preset course. The boat does not automatically respond to hazards such as other watercraft, obstacles, swimmers, or underwater terrain. Collision with these hazards could cause boat damage, serious injury, or death. The operator must stay at the helm, ready to evade hazards and warn others of course changes.**

**⚠ CAUTION**

**Avoid injury from unexpected turns at high speeds. Engaging the Track Waypoint or Waypoint Sequence feature while on plane can cause the boat to turn sharply. Confirm the direction of the next waypoint before engaging these autopilot features. When underway in Waypoint Sequence mode, be prepared to take appropriate action when reaching a waypoint.**

Axius Premier contains several modes that can steer your vessel to a specific compass heading, or to destinations generated from a chartplotter and GPS unit. If using a device to generate course information, you must be very familiar with the operation of that chartplotter and GPS unit before attempting to use Precision Pilot to steer your vessel. Precision Pilot does not control speed, only direction, and it can not sense hazards to navigation. These automatic modes do not relieve the operator of the responsibility to stay at the helm and keep a vigilant lookout for other vessels, persons in the water, or hazards to navigation.

If using Precision Pilot, a chartplotter, and a GPS unit to navigate along a series of waypoints (a route), be aware that the boat will not travel to the precise location of the waypoint before initiating a turn to the next waypoint. Your chart plotter establishes a zone around the point called an arrival circle, and the Precision Pilot system will announce arrival at the waypoint when the boat enters that zone.

# Track Waypoint

**⚠ WARNING**

**In some Precision Pilot modes—"Auto Heading," "Track Waypoint," and "Waypoint Sequence"—the boat navigates a preset course. The boat does not automatically respond to hazards such as other watercraft, obstacles, swimmers, or underwater terrain. Collision with these hazards could cause boat damage, serious injury, or death. The operator must stay at the helm, ready to evade hazards and warn others of course changes.**

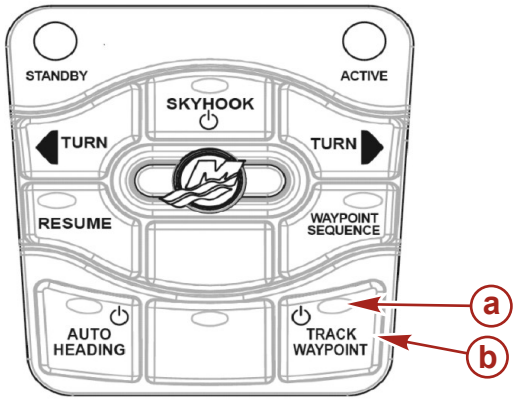
**IMPORTANT: Track Waypoint can only be used with chart plotters approved by Mercury applications engineers.**

Track Waypoint allows the boat to automatically navigate to a specific waypoint or sequence of waypoints, called a waypoint route. Waypoint data needs to be provided to VesselView by a third party chart plotter. Refer to your chart plotter's user manual for details.

## Engaging Track Waypoint Mode

To engage the Track Waypoint mode of Axius Premier:

1. Turn on the chart plotter and select a single waypoint or waypoint route to be tracked.
2. Place both ERC handles in forward gear. Track Waypoint does not function if both handles are in neutral or reverse.
3. Manually steer the boat to the direction of the first waypoint and hold the boat steady at a safe operating speed.
4. Press the "TRACK WAYPOINT" button on the Axius Premier Trackpad. The "TRACK WAYPOINT" button light turns on and a single horn beep sounds, indicating Track Waypoint engaged. Track Waypoint tracks to the first waypoint on the chart plotter course. Two horn beeps sound if Track Waypoint does not engage.




46115

**a -** Indicator light
**b -** "TRACK WAYPOINT" button

5. The VesselView "TRACK WAYPOINT" screen displays on VesselView for one second after pressing the "TRACK WAYPOINT" button. The display shows the digital heading that the boat is traveling, the angles of the drives, and engine speed in RPM. See **Mode Display** in **VesselView**.


31413

**Track Waypoint screen**

## Disengaging Track Waypoint Mode

1. Disengage the Track Waypoint mode by one of the following methods:
   - Press the "TRACK WAYPOINT" button on the Axius Premier Trackpad. The "TRACK WAYPOINT" button light goes off and Axius Premier goes to Standby. The "STANDBY" light turns on
   - Turn the steering wheel hard enough to overcome the detent and Axius Premier features go into Standby.
   - Move both ERC levers back to neutral and Axius Premier goes to Standby.
   - Press either "TURN" button and Axius Premier goes to Auto Heading mode.
   - Press the "AUTO HEADING" button and Axius Premier CAN Trackpad goes to Auto Heading mode.
   - Turn off the chart plotter and Axius Premier goes to Standby.
2. You can resume the Track Waypoint heading within one minute, if the vessel has not turned too far and the "RESUME" light is still on or flashing.

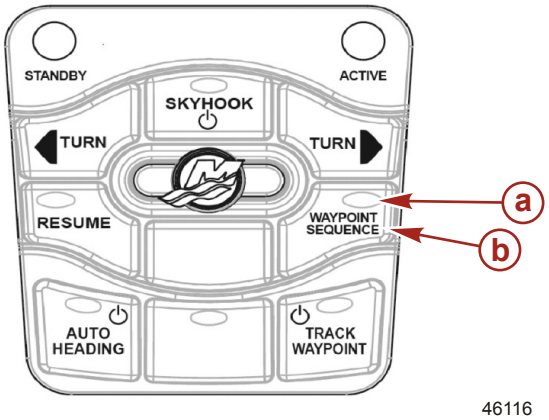
## Auto Heading Button in Track Waypoint Mode

While in "TRACK WAYPOINT" mode, press the "AUTO HEADING" button to cause Axius Premier to change to "AUTO HEADING" mode.

## Acknowledging a Turn During a Waypoint Arrival

**IMPORTANT: Track Waypoint mode does not automatically turn the boat upon arrival at a plotted waypoint.**

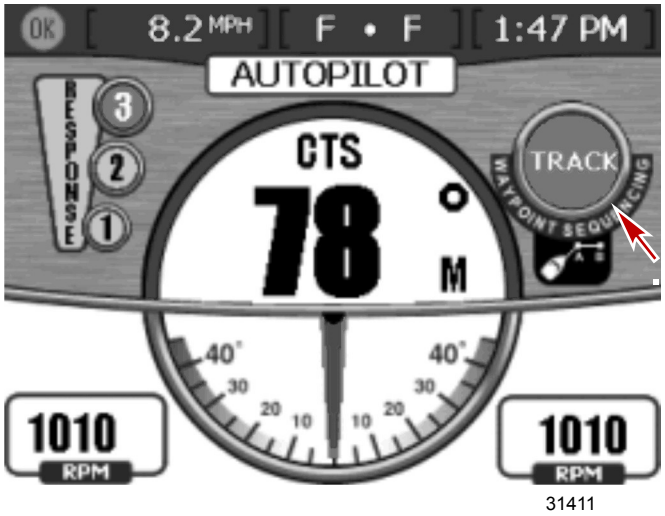
1. When the boat enters a waypoint arrival zone as indicated by the chart plotter, a short horn beep sounds and the "WAYPOINT SEQUENCING" button light starts blinking to inform the operator to make a turn.




46116

**a -** Indicator light
**b -** "WAYPOINT SEQUENCE" button

2. If the Waypoint Sequence mode has not been engaged, the "WAYPOINT SEQUENCE" icon light blinks at the arrival zone.




31411

**Waypoint Sequence icon light**

3. VesselView displays a pop-up screen warning. The operator must determine it is safe to turn the boat. If so, press the "WAYPOINT SEQUENCE" button to acknowledge that it is safe for Axius Premier CAN Trackpad to automatically turn the boat and maneuver to the new course.


31414

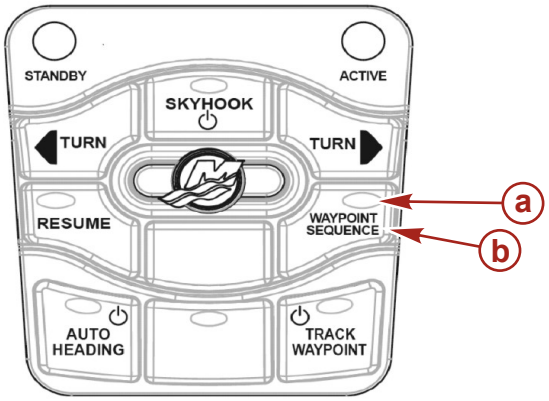
**Pop-up screen warning**

4. If the waypoint is not acknowledged, the boat continues on its current heading.
5. At the end of the Track Waypoint course, input a new route or take control of the boat. Otherwise, the boat will revert to auto heading mode and continues on its last course heading.

## Waypoint Sequence

1. Place the ERC lever or levers into forward. "WAYPOINT SEQUENCE" does not engage if the levers are in neutral or reverse.
2. If the Track Waypoint button light is not on, press the "TRACK WAYPOINT" button.

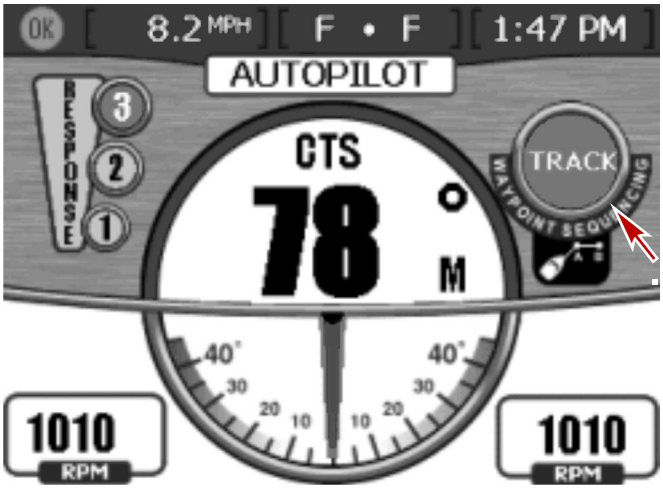
3. Press the "WAYPOINT SEQUENCE" button to engage Waypoint Sequence mode. The indicator light on the button will illuminate.




46116

**a -** Indicator lamp
**b -** "WAYPOINT SEQUENCE" button

4. A horn beep sounds on VesselView and the green circle icon on the Axius Premier screen will display "TRACK." The "TRACK" icon on the VesselView screen should illuminate.




31411

**Waypoint Sequence TRACK icon**

5. If you are in a waypoint arrival zone set by the chart plotter, Waypoint Sequence mode only informs Axius Premier it is OK to proceed to next waypoint. Waypoint Sequence mode acts as a waypoint acknowledge function and Axius Premier sounds a horn beep when in the zone.

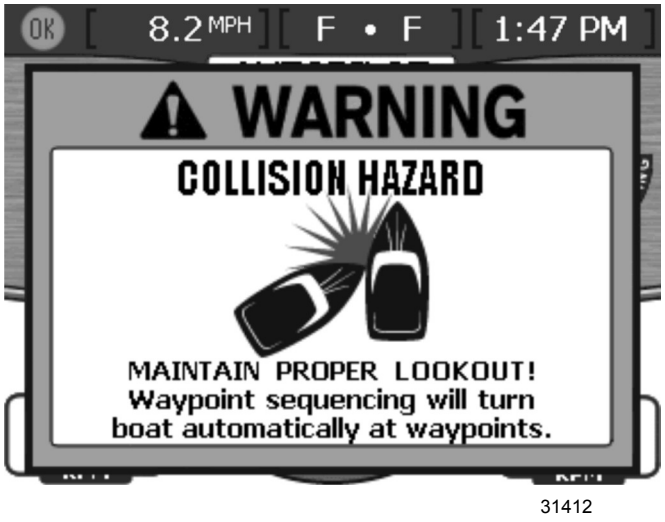
**⚠ WARNING**

**In some Precision Pilot modes—"Auto Heading," "Track Waypoint," and "Waypoint Sequence"—the boat navigates a preset course. The boat does not automatically respond to hazards such as other watercraft, obstacles, swimmers, or underwater terrain. Collision with these hazards could cause boat damage, serious injury, or death. The operator must stay at the helm, ready to evade hazards and warn others of course changes.**

6. Stay alert; the boat turns automatically in this mode. The operator must know if it is safe to turn when the vessel is entering a waypoint arrival zone. Inform passengers that the boat automatically turns so they can be prepared.


**Waypoint acknowledge screen**

7. If you are not in a previously set waypoint arrival zone, "WAYPOINT SEQUENCE" mode starts auto sequencing to the waypoints in the route. Acknowledge that you understand the information presented by the pop-up screen warning and press the enter button—the button with a check mark symbol.




**Pop-up screen warning**

8. Press the "TRACK WAYPOINT" button. The "WAYPOINT SEQUENCE" button light turns on and a single horn beep sounds.
9. Press the "TRACK WAYPOINT" button a second time to put Axius Premier in Standby mode. All lights other than "STANDBY" turn off.

## Cruise Control

The VesselView system features integrated throttle cruise control (cruise), which allows the operator to limit the peak RPM of choice below Wide Open Throttle (WOT). This feature requires VesselView. Refer to the owner's manual provided with your VesselView for operation instructions.

These additional notes are exclusive to your package:

- You can change or disengage cruise through the screen at any time.
- Cruise resets when the key is turned off.
- If the cruise limit is changed while the levers are at WOT, cruise gradually changes to the new speed.

- Cruise does not disengage if the ERC levers are at a higher engine speed than the actual RPM. Bring the levers back to the forward detent to disengage.

# Dual Helm (If Equipped)

## Dual-Helm Station Transfer

***NOTE:*** *Transfer will not activate if the joystick stick is in operation. due to not allowing helm transfer while in gear .*

The "TRANSFER" button allows the boat operator to transfer control of the boat from the active helm to the inactive helm. Have an operator at each helm during transfer in case the transfer is not successful. The transfer can only be accomplished when the ERC levers at both helms are in the neutral position. All engaged DTS functions carry over to the new active helm, but are not active because the boat is in neutral. Most Axius and Axius Premier functions that are engaged at the active helm will remain engaged, but not active due to the boat being in neutral. Skyhook, however, will turn off upon transfer, but can be engaged again at the new helm. The memory in the chartplotter at the active helm will be shared with the new helm if the new helm is equipped with a chartplotter. Helms without chartplotters lose the ability to use Track and Waypoint Sequence at that helm.

The ACTIVE light on the Axius touchpad is illuminated at the station that is in control of the boat.

The following functions carry over in their current state when the helm is transferred:

### DTS

***NOTE:*** *The following features will remain on if they were on, although they will not be active until the ERC levers are moved out of neutral.*

1. DOCK
2. THROTTLE ONLY
3. 1-LEVER

### Axius

***NOTE:*** *Auto heading requires that the boat be in gear and moving to engage. It will not be active during transfer as all controls must be in the Neutral position.*

**⚠ WARNING**

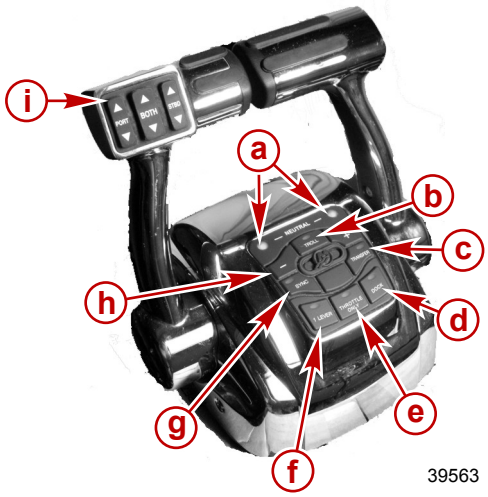
**Avoid serious injury or death from loss of boat control. The boat operator should never leave the active station while engine is in gear. Helm transfer should only be attempted while both stations are manned. One-person helm transfer should only be performed while engine is in neutral.**

***NOTE:*** *Neutral position is required when doing a station transfer. If conditions do not allow the remote control to be placed in neutral position the transfer can not be completed.*

***NOTE:*** *Pressing and releasing the TRANSFER button at new station allows the engine control to be transferred to the new station. Disable any engaged Axius and Axius premier functions.*

1. Place active remote control lever to neutral position.
2. Have a capable operator at the inactive helm station and position remote control lever to the neutral position.
3. Communicate to the operator at the inactive helm that the transfer is ready to take place. Press the TRANSFER button on the inactive helm once to initiate and match lever demand. Move the levers as necessary to match the demand.

4. Press TRANSFER button on the inactive helm a second time to complete the transfer. The "ACTIVE" light will illuminate to indicate the station is in control of the engine. If more than 10 seconds elapse between the first and second presses, the transfer will abort. The Neutral lights will flash between the two button pushes.




**Yacht handled ERC levers with DTS trackpad, typical**

- **a -** Neutral lights
- **b -** TROLL
- **c -** TRANSFER
- **d -** DOCK
- **e -** THROTTLE ONLY
- **f -** 1 LEVER
- **g -** SYNC
- **h -** "+ "(Increase) and "-" (Decrease)
- **i -** Trim buttons

5. The active light will switch off at the original remote control station.
6. Engage any desired functions at the new helm.

No settings from the previous helm will transfer to the new helm. Skyhook, if active at the previous helm, will turn off upon transfer. However, Skyhook can be immediately re-engaged upon successful helm transfer.

# Battery Information

## Long Term Battery Storage & Maintenance Recommendations

When a boat is not going to be used for a long period of time (longer than 3 weeks), steps should be taken to ensure that the batteries are properly maintained to mitigate low voltage issues in the future.

- A battery "maintainer" (smart charger) should be in use anytime the boat is not operational. This is usually done through shore power, but a dedicated battery maintainer can be used directly on a battery if warranted (i.e. boat not equipped with shore power, shore power unavailable, etc). Be sure the battery maintainer is matched to the battery technology in use (sealed lead acid, absorbed glass mat, etc) and is only used on the appropriate number of batteries.
- Adequate ventilation is always required when batteries are being charged due to the production of O2 and H2 (oxygen and hydrogen), even with sealed batteries. Ensure there is sufficient ventilation where a battery is being charged, regardless of where the batteries are located.
- If the boat is on a trailer, or is being hauled out and placed in dry storage, i.e. on a boat rack or blocks, one should consider physically disconnecting the batteries from the boat and placing them on a maintainer. The batteries could be left in the boat but electrically disconnected from the boat if the batteries are easily accessible for maintanence, the ventilation is sufficient, and temperatures do not drop below freezing (0°C/ 32°F).
- If the boat is being placed onto a boat rack where accessibility is not possible or the battery compartment temperatures are expected to drop well below freezing, i.e., less than -10°F, the batteries should be removed from the boat and placed in suitable dry storage area, with maintainers connected and adequate ventilation provided. Even though fully charged batteries can withstand hard freezing temperatures, battery life can be increased by minimizing unnecessary stresses like this.
- In all cases, the battery voltage, specific gravity, and battery level should be monitored periodically during storage.

### Recommissioning

- Sometimes a battery may get left off a maintainer. It is paramount to give it a full charge before attempting to embark on a voyage. Most batteries that have sat for a time will take 48-96 hours to fully charge depending on chemistry, technology, depth of discharge, capacity of maintainer, and general health of the battery.
- When preparing to restore batteries back to operation within the boat, it is paramount to test the batteries to ensure they are fully functional. There are two primary aspects to consider – State of Charge (SOC) and State of Health (SOH). A good test device will determine if a "surface charge" is giving a false indication of a good charge state. State of Health is not as common as SOC, but does indicate remaining useful life of the battery. A SOH test device measures the internal resistance over a frequency range to give you a reading. While it would be prudent to replace a battery if SOH is <50%, do not put a battery into service that has less than a 30% State of Health. A battery load tester is a general indicator of a battery's ability to provide a cranking current but it is not as accurate as actual SOC and SOH readings.

- Another item of consideration is the quality of the connections being made to the batteries. Inspect for corrosion and poor terminal connections (crimp, corrosion, strand breakage, etc) prior to restoring batteries to full operation. As required, ensure battery cells have adequate electrolyte fluid levels (use only distilled water and no metal funnels!) and use a silicone grease on the battery post terminals.

# Contingent Operations

## Port Engine–Only Operation

The force feedback feature of the steering wheel is only available when the starboard key switch is in the on position. If the starboard key switch is off or there has been damage to the starboard electrical system, the port control system monitors the steering wheel.

If only the port side is operational, or only the port key switch is in the on position, the force feedback system will not provide end stops for the steering wheel. In this case, the drive will turn in the direction of steering wheel rotation until the mechanical limits of the drive are reached.

***NOTE:*** *If the port electrical system is damaged, the steering wheel will operate normally with complete force feedback and end stops.*

Note that joystick is not available in single-engine operation. However, Axius features redundant trackpad systems, so Auto Heading mode is still available during single-engine operation.

## Axius Shift Override—Emergency Procedure

If the VesselView display shows the error message "GEAR POS DIFF" and an engine will not start or will not shift into gear, there is a problem with the Electronic Shift Control (ESC) system. If one drive is working, you may operate on one engine and drive.

**⚠ CAUTION**

**Using the emergency procedure to manually shift the drive disengages shift control at the helm. To avoid damage or injury, drive cautiously when a gear is engaged manually. To stop the drive and its propeller, you must turn the key switch to the off position.**

You can disengage the shift actuator to manually shift the drive into neutral for starting and into forward gear position for operation. Engine speed will be limited to 1000–1200 RPM while operating in emergency shift override.

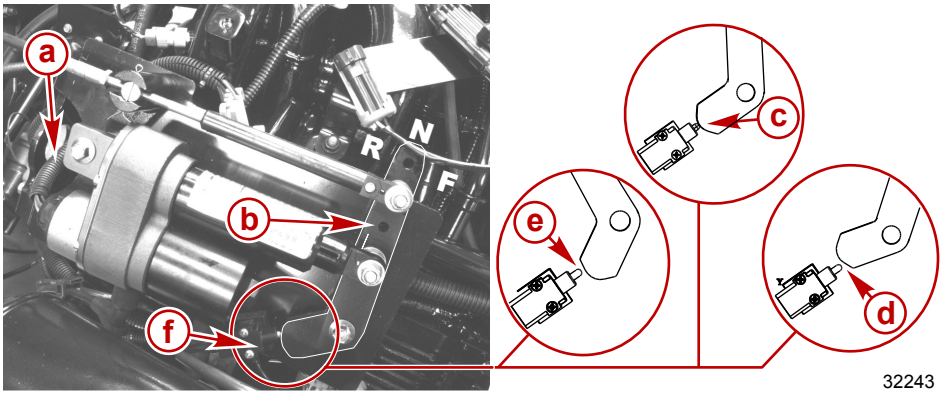
To disengage the shift actuator:

1. Turn the ignition switch to the off position and engage the emergency lanyard, if equipped.

**⚠ WARNING**

**Engine components and fluids are hot and can cause serious injury or death. Allow the engine to cool before removing any components or opening any fluid hoses.**

2. Unplug the shift actuator wiring harness connector.
3. Move the shift lever into the neutral position. The shift actuator is in the neutral position when the shift lever is straight up and the shift interrupt switch is fully engaged.




**a -** Harness
**b -** Shift lever
**c -** Shift lever in neutral position
**d -** Shift lever in forward position
**e -** Shift lever in reverse position
**f -** Gear position indicator switch

4. With the drive in neutral, place the ERC into the neutral (idle) position.
5. Reset the lanyard.

**⚠ WARNING**

**A spinning propeller, a moving boat, or any solid device attached to the boat can cause serious injury or death to swimmers. Stop the engine immediately whenever anyone in the water is near your boat.**

6. Ensure that no one is in the water near the boat, then start the engine.
7. With the engine running at idle speed, the drive can be shifted into gear and out of gear by manually moving the shift lever.

   ***NOTE:*** *Engine speed will be limited to 1000–1200 RPM while operating in emergency shift override. The Auto Heading feature using the Axius track pad will still function but is limited to this reduced RPM setting.*

   **IMPORTANT: The boat's stopping distance increases during manual gear engagement operation.**

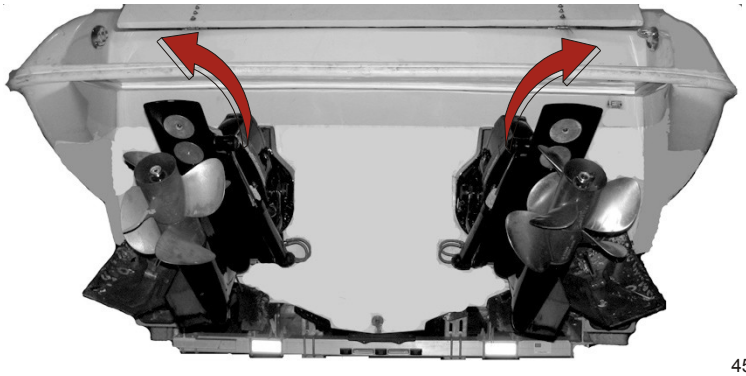
# Transporting an Axius Boat

The drives on an Axius boat are not connected by a tie bar, and can be moved independently by gravity and the vibrations of traveling, making it possible for the drives to contact each other.

Avoid the possibility of the drives making contact during travel:

1. Remove the propellers (optional on short moves).
2. Put the drives in the full-up, trailer position.
3. Push each drive out towards the side of the boat, past the straight ahead position.

When trimmed up and pushed outward, the drives will move away from each other if they move.



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**Boat on trailer, drives trimmed up and pushed outward**

# Notes:

# Section 3 - Troubleshooting

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3

# Check VesselView First

Your VesselView display is the primary information source for the various functions of your boat. Consult the VesselView display if you suspect something is wrong. VesselView displays faults and other information that can be helpful in determining the current status of various systems that could be causing your concern and the solution to the problem.

# Diagnosing DTS Problems

Your authorized Mercury MerCruiser dealer has the proper service tools for diagnosing problems on Digital Throttle and Shift (DTS) Systems. The Electronic Control Module (ECM)/Propulsion Control Module (PCM) on these engines has the ability to detect some problems with the system when they occur, and store a Trouble Code in the ECM/PCM's memory. This code can then be read later by a service technician using a special diagnostic tool.

# Engine Guardian System

The Engine Guardian System monitors the critical sensors on the engine for any early indications of problems. The system will respond to a problem by emitting a continuous beep and/or reducing engine power in order to provide engine protection.

If Guardian System has been activated, reduce throttle speed. The horn will turn off when throttle speed is within the allowable limit. Consult an authorized Mercury MerCruiser dealer for assistance.

# Troubleshooting Charts

## Joystick

| Symptom | Remedy |
|---|---|
| The joystick does not control the boat. | One or both remote controls are not in neutral. Put both remote controls in neutral. |
| | One or both engines are not running. Start the engine or engines. |
| Response to joystick input is erratic, or the joystick operates independent of input. | Ensure there are no radios or other sources of electronic or magnetic interference near the joystick. |
| The joystick does not function properly and a fault code is set. | Check VesselView for Guardian fault codes that indicate reduced engine power. If found, have the system checked by your authorized Mercury MerCruiser dealer. |
| The joystick operates eratically. | Check trim position. Trim drives down. |
| The joystick operates too agressively | Activate Dock mode. |

## Electronic Remote Controls

| Symptom | Remedy |
|---|---|
| The ERC (electronic remote control) lever is too hard or too easy to move out of neutral detent. | Adjust detent tension. See **Section 1, Dual Handle Electronic Remote Control with DTS Trackpad Features and Operation** . |
| The ERC lever has too much or too little resistance through its range of motion. | Adjust the handle tension screw. See **Section 1, Dual Handle Electronic Remote Control with DTS Trackpad Features and Operation** . |
| The ERC lever increases engine RPM, but the engines do not engage gears and the boat does not move. | Key off and key on. |
| | Check the "Throttle Only" button on the DTS trackpad. Put the ERC levers in neutral and push the button to disengage, if the light is on. |
| | Engage gears manually. See **Section 2, Axius Shift Override—Emergency Procedure**. |
| | Contact your authorized Mercury MerCruiser dealer. |
| The ERC lever controls the engine and drive, but does not reach wide open throttle. | If the engine only reaches 50% of WOT, check the "DOCKING" button on the DTS trackpad. Put the handles in neutral and push the button to disengage, if light is on. |
| | Check VesselView to see if cruise control is enabled. Disable cruise control. |
| | Check for damage to the propeller. If found, contact your authorized Mercury MerCruiser service technician to ask if the propellers need to be repaired or changed. |
| | Check VesselView for Guardian fault codes that indicate reduced engine power. If found, contact your authorized Mercury MerCruiser dealer. |
| The ERC lever controls the engine and drive, but does not respond in a linear manner. | Check the "TROLL" button on the DTS track pad. If light is on, put the handles in Neutral and push the "TROLL" button to disengage, |
| | Check whether dock mode or cruise control are on. If on, turn off or disengage. |
| When one ERC lever is moved, both engines respond. | Check the "1 LEVER" button on the DTS track pad. If the light is on, put the handles in neutral and push the "1 LEVER" button to disengage. |
| The ERC control, joystick, and steering wheel do not function. | Press "TRANSFER" on DTS track pad to restore helm control. (Multiple helm boats only.) |
| Boat goes forward but will not go backwards quickly. | Trim drives down. |

## Steering System

| Symptom | Remedy |
|---|---|
| The steering wheel steers the boat, but operates without end stops. | The starboard key switch is tuned off. Turn on the key. |
| | Check if the starboard power circuit breaker has tripped. Reset the circuit breaker, if tripped. |
| Steering wheel does not steer the boat. | Reduce speed and change to joystick for directional control. Check VesselView for faults. |
| | Check steering actuator fuse on back of engine. |
| | Check steering clevis pin. |
| | Check harness connectors in steering actuators. |
| | Check steering fluid level and fill if necessary. See **Section 5—Maintenance** in the appropriate engine Owner's, Operator's, and Warranty manual. |
| | Contact your authorized Mercury MerCruiser service technician. |
| Steering works, but the boat is not as responsive. | Key off and key on. |
| | Check and start the port engine. |
| | Check the trim. Adjust if necessary. |
| | Check the steering fluid level and fill if necessary. See **Section 5—Maintenance**in the appropriate engine Owner's, Operator's, and Warranty manual. |
| | Contact your authorized Mercury MerCruiser service technician |
| The steering wheel turned past end stop. | Key off and key on to restore steering wheel self-centering, cruise control, and to eliminate the fault code. |

## Trackpad Features

***NOTE:*** *See also Electronic Remote Controls for more situations that also involve the ERC.*

| Symptom | Remedy |
|---|---|
| Boat control stuck in "DOCK" mode. | When DTS features are started with both engines running and one engine is turned off, DTS will get stuck in that feature. Restart the engine to be able to exit the feature. |
| Boat control stuck in "THROTTLE ONLY" mode | |
| Boat control stuck in "1 (SINGLE) LEVER " mode | |

## Auto Pilot

| Symptom | Remedy |
|---|---|
| Track Waypoint is not working | Verify the chartplotter is on. |
| | Verify the chartplotter has an active waypoint. |
| | Verify the speed forward is greater than 2.6 knot 3 mph. |
| | Verify the chartplotter is communicating with VesselView. Compare waypoint names. They should be the same. |
| | Verify the steering wheel has endstops. If no endstops, refer to "Steering System" above. |
| | Verify the GPS is working. Turn off the chartplotter and check latitude and longitude on VesselView. |

## Skyhook

| Symptom | Remedy |
|---|---|
| Skyhook does not work | Ensure that Skyhook is enabled by the vessel personality. |
| | Is VesselView on? VesselView must be turned on for Skyhook to function. |
| | Is the GPS working? If locked, cycle keys. |

# Notes:

# Section 4 - Customer Assistance Information

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# Owner Service Assistance

## Local Repair Service

If you need service for your Mercury MerCruiser–powered boat, take it to your authorized dealer. Only authorized dealers specialize in Mercury MerCruiser products and have factory-trained mechanics, special tools and equipment, and genuine Quicksilver parts and accessories to properly service your engine.

***NOTE:*** *Quicksilver parts and accessories are engineered and built by Mercury Marine specifically for Mercury MerCruiser sterndrives and inboards.*

## Service Away From Home

If you are away from your local dealer and the need arises for service, contact the nearest authorized dealer. Refer to the Yellow Pages of the telephone directory. If, for any reason, you cannot obtain service, contact the nearest Regional Service Center. Outside the United States and Canada, contact the nearest Marine Power International Service Center.

## Stolen Power Package

If your power package is stolen, immediately advise the local authorities and Mercury Marine of the model and serial numbers and to whom the recovery is to be reported. This information is maintained in a database at Mercury Marine to aid authorities and dealers in recovery of stolen power packages.

## Attention Required After Submersion

1. Before recovery, contact an authorized Mercury MerCruiser dealer.
2. After recovery, immediate service by an authorized Mercury MerCruiser dealer is required to reduce the possibility of serious engine damage.

## Replacement Service Parts

**⚠ WARNING**

**Avoid fire or explosion hazard. Electrical, ignition, and fuel system components on Mercury Marine products comply with federal and international standards to minimize risk of fire or explosion. Do not use replacement electrical or fuel system components that do not comply with these standards. When servicing the electrical and fuel systems, properly install and tighten all components.**

Marine engines are expected to operate at or near full throttle for most of their life. They are also expected to operate in both fresh and saltwater environments. These conditions require numerous special parts. Exercise care when replacing marine engine parts, because specifications are different from those of the standard automotive engine. For example, one of the most important special replacement parts, is the cylinder head gasket. Marine engines cannot use steel-type automotive head gaskets because saltwater is highly corrosive. A marine engine head gasket uses special materials to resist corrosion.

Because marine engines must be capable of running at or near maximum RPM much of the time, they also have special valve springs, valve lifters, pistons, bearings, camshafts and other heavy-duty moving parts.

Mercury MerCruiser marine engines have other special modifications to provide long life and dependable performance.

### Parts and Accessories Inquiries

Direct any inquiries concerning Quicksilver replacement parts and accessories to your local authorized dealer. The dealer has the necessary information to order parts and accessories for you if they are not in stock. Only authorized dealers can purchase genuine Quicksilver parts and accessories from the factory. Mercury Marine does not sell to unauthorized dealers or retail customers. When inquiring on parts and accessories, the dealer requires the **engine model** and **serial numbers** to order the correct parts.

## Resolving a Problem

Satisfaction with your Mercury MerCruiser product is very important to your dealer and to us. If you ever have a problem, question or concern about your power package, contact your dealer or any authorized Mercury MerCruiser dealership. If you need additional assistance:

1. Talk with the dealership's sales manager or service manager. Contact the owner of the dealership if the sales manager and service manager have been unable to resolve the problem.
2. If your question, concern, or problem cannot be resolved by your dealership, please contact Mercury Marine Service Office for assistance. Mercury Marine will work with you and your dealership to resolve all problems.

The following information will be needed by the Customer Service:

- Your name and address

- Daytime telephone number
- Model and serial numbers for your power package
- The name and address of your dealership
- Nature of problem

## Contact Information for Mercury Marine Customer Service

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

| Telephone | Fax | Mail |
|---|---|---|
| +1 920 929 5040 | +1 920 906 6033 | Mercury Marine<br>W6250 West Pioneer Road<br>P.O. Box 1939<br>Fond du Lac, WI 54936-1939 |
| +1 905 567 6372 (MERC) | +1 905 567 8515 | Mercury Marine Ltd.<br>2395 Meadowpine Blvd.<br>Mississauga, Ontario L5N 7W6<br>Canada |
| +61 3 9791 5822 | +61 3 9793 5880 | Mercury Marine – Australia<br>132-140 Frankston Road<br>Dandenong, Victoria 3164<br>Australia |
| + 32 87 32 32 11 | +32 87 31 19 65 | Marine Power – Europe, Inc.<br>Parc Industriel de Petit-Rechain<br>B-4800 Verviers,<br>Belgium |
| +954 744 3500 | +954 744 3535 | Mercury Marine – Latin America & Caribbean<br>11650 Interchange Circle North,<br>Miramar, FL 33025<br>U.S.A. |
| +81 53 423 2500 | +81 53 423 2510 | Mercury Marine – Japan<br>283-1 Anshin-cho<br>Hamamatsu, Shizuoka 435-0005<br>Japan |
| +65 6546 6160 | +65 6546 7789 | Mercury Marine – Singapore<br>29, Loyang Drive<br>Singapore, 508944 |

# Ordering Literature

Before ordering literature, please have the following information about your power package available:

- Model
- Serial number
- Horsepower
- Year built

## United States and Canada

For information on additional literature that is available for your particular Mercury MerCruiser power package and how to order that literature contact your nearest dealer or contact us at:
Mercury Marine Publications
P.O. Box 1939
Fond du Lac, WI 54936-1939
(920) 929 5110
Fax (920) 929 4894

## Outside the United States and Canada

Contact your nearest dealer or Marine Power Service Center for information on additional literature that is available for your particular Mercury MerCruiser power package and how to order that literature.

Print or type your mailing address, which be used as your shipping label, and include your order and payment. Mail to:
Mercury Marine
Attn: Publications Department
W6250 West Pioneer Road
P.O. Box 1939
Fond du Lac, WI 54936-1939
USA

# Section 5 - Predelivery (PDI) and Customer Delivery (CDI) Checklists

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# Predelivery Inspection (PDI)

**IMPORTANT: This checklist is for packages equipped with Axius. For engine packages not equipped with Axius, use the standard MerCruiser PDI checklist.**
**Perform these tasks before the Customer Delivery Inspection (CDI).**

| N/A | Check/ Adjust | Item |
|---|---|---|
| | | **Check Before Running** |
| ☐ | ☐ | Service bulletin updates or repairs completed |
| | ☐ | Drain plug installed and drain valves closed |
| ☐ | ☐ | Seawater inlet valve open |
| | ☐ | Engine mounts tight |
| | ☐ | Engine alignment |
| | ☐ | Drive unit fasteners tightened to specifications |
| | ☐ | Power trim cylinders fasteners tight |
| | ☐ | Battery of proper rating, fully charged, secured, with protective covers in place |
| | ☐ | All electrical connections tight |
| | ☐ | Exhaust system hose clamps tight |
| | ☐ | All fuel connections tight |
| | ☐ | Correct propeller selected, installed, and tightened to specifications |
| | ☐ | Throttle, shift and steering system fasteners tightened to specifications |
| ☐ | ☐ | Test OBDM warning system and MIL (light) operation (EC models only) |
| | ☐ | Steering operation throughout range |
| | ☐ | Crankcase oil level |
| | ☐ | Power trim oil level |
| | ☐ | Sterndrive unit oil level |
| | ☐ | Power steering fluid level (Dexron III only) |
| ☐ | ☐ | Closed Cooling fluid level |
| | ☐ | Serpentine belt tension |
| ☐ | ☐ | SmartCraft gauges calibrated, if equipped |
| | ☐ | Warning system operation |
| | ☐ | Trim limit switch operation |
| | | TVM: |
| | ☐ | Inspect the starboard TVM steering clevis pin (locking tabs secured, cotter pins secured). |
| | ☐ | Inspect the port hydraulic steering fluid reservoir level (Dexron III only). |
| | | Engine: |
| | ☐ | Inspect the port hydraulic steering fluid reservoir level (Dexron III only). |
| | | Helm: |
| | ☐ | Inspect the joystick (full movement in all directions). |
| | ☐ | Inspect the steering wheel and tilt mechanism. |
| ☐ | ☐ | Inspect the VesselView (powers up with either key switch), if equipped. |
| ☐ | ☐ | Inspect the Axius trackpad (functional), if equipped. |

**Predelivery Inspection Checklist, Continued**

| N/A | Check/ Adjust | Item |
|---|---|---|
| | | **On-the-Water Test** |
| | ☐ | Starter neutral safety switch operation |
| | ☐ | E-stop switch/lanyard stop switch operation (all helms) |
| | ☐ | Seawater pump operation |
| | ☐ | Operation of instruments |
| | ☐ | Fuel, oil, and water leaks |
| | ☐ | Exhaust leaks |
| | ☐ | Ignition timing |
| | ☐ | Forward, neutral, and reverse gear operation |
| | ☐ | Steering operation throughout range |
| | ☐ | Acceleration from idle RPM is normal |
| | ☐ | WOT_____ RPM within specification (in forward gear) |
| ☐ | ☐ | EC models: run two full operating cycles (key "ON/OFF") to WOT with engine at normal operating temperature while monitoring engine with G3 CDS to verify engine goes into closed-loop engine control. |
| | ☐ | Power trim operation |
| ☐ | ☐ | Confirm vessel personality list. |
| | ☐ | Ensure the steering wheel returns to center position during key "ON" of starboard engine. |
| ☐ | ☐ | Perform IMU (compass) calibration and zero heading correction with CDS G3 Service Tool. |
| | ☐ | Maneuver the boat to port by moving the joystick to full port. Ensure undesirable movement can be corrected by minimal operator joystick input. |
| | ☐ | Maneuver the boat to starboard by moving the joystick to full starboard. Ensure that undesirable movement can be corrected by minimal operator joystick input. |
| | ☐ | Ensure vessel tracks a straight course at cruising speed. Perform drive alignment if required with CDS G3 Service Tool. |
| ☐ | ☐ | Enable Auto Heading and drive for one minute at cruising speed ensuring less than ± 5° deviation to port or starboard. |
| | ☐ | Check steering response by steering boat from lock to lock at different speeds, starting at idle and accelerating through cruising speed in 1000 RPM increments. |
| | ☐ | Perform a hard starboard turn at in-gear idle while increasing to WOT while in turn. Ensure that boat steering remains responsive. |
| | ☐ | Perform a hard starboard turn at in gear idle with both engines running. Turn the starboard engine off during the turn. Ensure boat steering remains responsive. |
| | | **After On-the-Water Test** |
| | ☐ | Propeller nut tightened to specification |
| | ☐ | Fuel, oil, coolant, water and fluid leaks |
| | ☐ | Oil and fluid levels |
| | ☐ | Apply Quicksilver Corrosion Guard to engine package |
| | ☐ | Operation, Maintenance & Warranty manual in boat |
| | | **If the Boat Is Registered to a Resident of California** |
| ☐ | ☐ | CARB hang tag in boat |
| ☐ | ☐ | CARB decal properly affixed to boat hull |

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# Customer Delivery Inspection (CDI)

**IMPORTANT: This inspection must take place in the presence of the customer.**
**This checklist is for packages equipped with Axius. For engine packages not equipped with Axius, use the standard MerCruiser CDI checklist. Perform these tasks after the Predelivery Inspection (PDI).**

| N/A | Completed | Item |
|---|---|---|
| | ☐ | Operation and maintenance manual—provide and review with customer. Emphasize the importance of safety warnings and Mercury engine testing procedures. |
| | ☐ | Approve the external appearance of the product (paint, cowl, decals, etc.) |
| | ☐ | Warranty—provide and explain the limited warranty to the customer. Explain dealer services. |
| ☐ | ☐ | Explain optional Mercury Product Protection Plan to the customer (North America only) |
| | | **Operation of equipment—explain and demonstrate:** |
| | ☐ | E-stop switch / lanyard stop switch operation (all helms) |
| | ☐ | Cause and effect of steering torque or pull; instruct on using a firm steering grip; explain boat spin-out and how to trim for neutral steering. |
| ☐ | ☐ | U.S. Coast Guard capacity plate |
| | ☐ | Proper seating |
| | ☐ | Importance of personal flotation devices (PFDs or life vests) and throwable PFDs (throw cushions) |
| ☐ | ☐ | Functions of SmartCraft accessories (if applicable) |
| | ☐ | Off-season storage and maintenance schedule |
| | ☐ | Engine (starting, stopping, shifting, using throttle) |
| | ☐ | Boat (lights, battery switch location, fuses/breakers) |
| ☐ | ☐ | Trailer (if applicable) |
| | | **Safety:** |
| | ☐ | Enable Throttle Only and demonstrate its ability to disable shifting of the electronic remote control and joystick while engines are running. |
| | | **Joystick:** |
| | ☐ | Demonstrate that the joystick requires both engines to be running to operate |
| | ☐ | Rotate the joystick to port and starboard to demonstrate pivot capabilities. |
| | ☐ | Place the joystick to port to translate the boat while demonstrating the ability to compensate for current and wind by rotating the top of the joystick and inputting slight forward and reverse inputs. Repeat going starboard. |
| | ☐ | Enable docking mode to demonstrate reduced throttle response for the joystick maneuvers. |
| | | **Upgrades:** |
| ☐ | ☐ | Demonstrate methods to enable and disable Auto Heading, if equipped. |
| ☐ | ☐ | Demonstrate methods to enable and disable Skyhook, if equipped. |
| ☐ | ☐ | Demonstrate methods to enable and disable AutoPilot Waypoint Sequencing, if equipped. |
| | | (Upgrade features can be disabled by moving the steering wheel, the ERCs, or by pushing the AP trackpad feature button again.) |
| | | **Steering wheel:** |
| | ☐ | Demonstrate that the starboard keyswitch must be on for the steering wheel to autocenter and force feedback. |
| | ☐ | Show the location of the 20 A circuit breaker. |
| | ☐ | Demonstrate the steering wheel autocenter feature. |
| | | **Maintenance:** |
| | ☐ | Explain hydraulic power steering fluid checks, fluid required, and service intervals for power steering filter (if equipped). |
| | | **Registration:** |
| | ☐ | Complete and submit warranty registration—provide the customer with a copy. |