Welcome

You have selected one of the finest outboard products available. It incorporates numerous design features to ensure operating ease and durability.

With proper care and maintenance, you will thoroughly enjoy using this product for many boating seasons. To ensure maximum performance and carefree use, we ask that you thoroughly read this manual.

This manual is a supplement to the owner's manual provided with your engine. It provides additional, specific information for using and maintaining the Joystick Piloting for Outboards propulsion system. Read this manual carefully before operating the Joystick Piloting for Outboards propulsion system.

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

Mercury Marine

Warranty Message

The product you have purchased comes with a limited warranty from Mercury Marine. The terms of the warranty are set forth in the **Warranty** manual or Warranty section 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. Be certain to review this important information.

Mercury Premier Service

Mercury evaluates the service performance of its dealers and assigns its highest rating of "Mercury Premier" to those demonstrating an exceptional commitment to service.

Earning a Mercury Premier Service rating means a dealer:

- Achieves a high 12-month service Customer Satisfaction Index (CSI) score for warranty service.
- Possesses all of the necessary service tools, test equipment, manuals, and parts books.
- Employs at least one certified or master technician.
- Provides timely service for all Mercury Marine customers.
- Offers extended service hours and mobile service, when appropriate.
- Uses, displays, and stocks an adequate inventory of genuine Mercury Precision Parts.
- Offers a clean, neat shop with well-organized tools and service literature.

Read This Manual Carefully

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

Notice to Users of This Manual

Throughout this publication, safety alerts labeled WARNING and CAUTION (accompanied by the international hazard symbol ⚠) are used to alert you to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. Observe these alerts 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.

Additional alerts provide information that requires special attention:

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.*

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.

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TABLE OF CONTENTS

Section 1 - Getting to Know the Joystick Piloting for Outboard

Section 2 - On the Water

Section 3 - Troubleshooting

Section 4 - Maintenance

Section 5 - Customer Assistance Information

Section 6 - Predelivery (PDI) and Customer Delivery (CDI) Checklists

Section 1 - Getting to Know the Joystick Piloting for Outboard

1

Table of Contents

Vessel Personality

Mercury Marine and your boat builder developed a vessel propulsion personality to ensure optimal performance of the joystick, steering, and autopilot under ideal conditions. As conditions, such as wind and current change, user input will be required to compensate.

Changing engine performance, gear ratios, or propellers 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 effect on performance, and changes must not be made without first consulting the OEM and a Mercury product integration engineer.

The vessel propulsion 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.

Features and Controls

Instrumentation

VesselView

There are several VesselView products available. Joystick Piloting for Outboard requires VesselView 7 or VesselView 4. VesselView will display all engine information, fault codes, vessel information, basic navigation data, and system information. When an operating system error or failure occurs, VesselView displays an alarm message.

VesselView may also be connected to other vessel systems such as GPS, generators, and chartplotters. This vessel integration allows the operator to monitor and control a wide range of vessel systems from a single display.

Refer to the VesselView operator's manual for more information.

51849

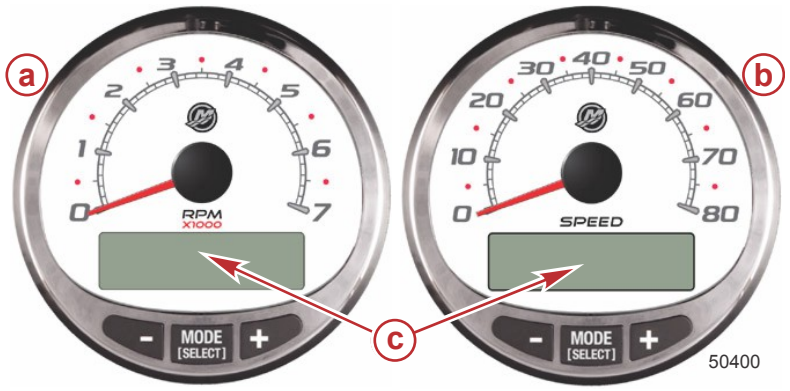
VesselView 7

SmartCraft Digital Gauges

The SmartCraft instrument package augments the VesselView information. The instrument package may include:

- Tachometer
- Speed
- Engine coolant temperature
- Engine oil pressure
- Battery voltage
- Fuel consumption

- Engine operating hours



SmartCraft tachometer and speedometer

a - Tachometer
b - Speedometer
c - LCD display

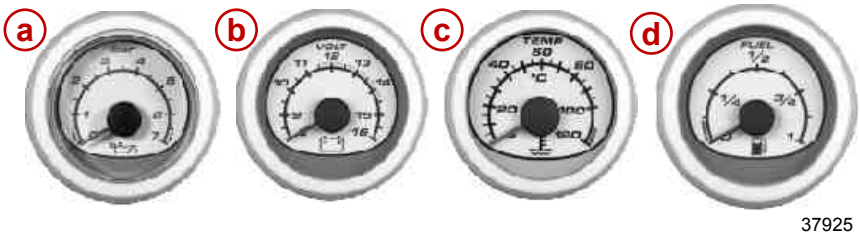
The SmartCraft instrument package also aids in identifying the fault codes associated with the engine audio warning system. The SmartCraft instrument package displays critical engine alarm data and other potential problems on its LCD display.

For basic operation information on the SmartCraft instrument package and for details on the warning functions monitored by the system, refer to the manual provided with your gauge package.

System Link Digital Gauges

Some instrumentation packages include gauges that augment the information provided by VesselView and the SmartCraft tachometer and speedometer. The owner and operator should be familiar with all the instruments and their functions on the boat. Have your boat dealer explain the gauges and normal readings that appear on your boat.

The following types of digital gauges may be included with your power package.



System Link digital gauges

Item	Gauge	Indicates
a	Oil pressure gauge	Engine oil pressure
b	Voltmeter	Battery voltage
c	Water temperature gauge	Engine operating temperature
d	Fuel gauge	Quantity of fuel in tank

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 in an open area clear of obstructions or other boat traffic until you have a chance to explore the outboard joystick piloting system's handling characteristics and the boat's response. The electronic steering system can provide a faster steering response than expected.

Your vessel's propulsion personality, as developed by the vessel manufacturer in partnership with Mercury Marine, determines the number of turns of the steering wheel. Typically, this is about four turns of the wheel from lock-to-lock. The number of turns lock-to-lock may vary based upon the boat handling characteristics.

The stops that you feel when turning the wheel to full lock are not hard stops. The end stops are electric and are driven by the electric motor attached to the steering wheel.

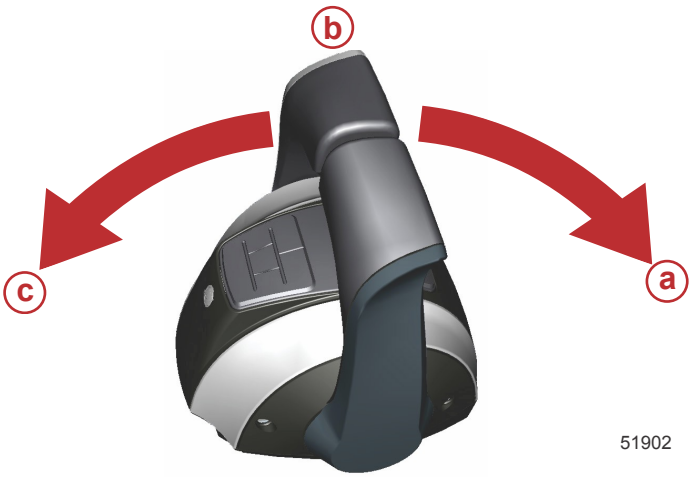
You may experience times during which the electronic end stops of the wheel are **not** felt. This will happen when the starboard key is off, the starboard battery voltage is low, the 20-amp circuit breaker (typically labeled "Helm Main Power" or similar) is tripped, or a steering wheel motor fault occurs. This loss of feedback will not result in loss of steering, however. The engines will still stop turning when the wheel reaches the hard-over position at each lock.

Dual-Handle Electronic Remote Control (ERC)—Operation and Adjustment

Operation

The electronic remote control (ERC) handle controls the shift and throttle operation. Push the control handle forward from neutral to the first detent for forward gear. Continue pushing the handle forward to increase speed. Pull the control handle from the forward position to the neutral position to decrease speed and eventually stop. Pull the control handle back from neutral to the first detent for reverse gear. Continue pulling the handle back to increase speed in reverse.

NOTE: *In certain modes, the gear position is determined by the electronic shift control, not the position of the ERC levers. When using the joystick or while in Skyhook, the computer controls the shifting even though the ERC levers are in neutral.*



a - Forward
b - Neutral
c - Reverse

To help prevent unwanted motion, the amount of force needed to move the levers is adjustable.

Adjustment

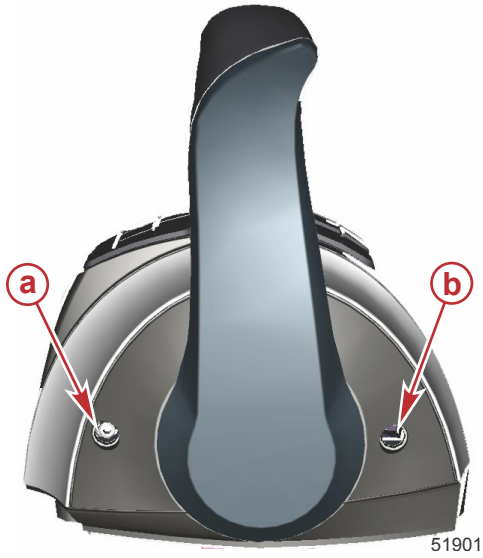
NOTE: *The control handle tension and detent tension may require periodic maintenance using the adjustment screws.*

To adjust the handle detent tension:

1. Remove the side cover plugs of the handle that needs adjustment.
2. Turn the adjustment screw clockwise to increase tension on the control handle and counterclockwise to decrease tension.
3. Adjust the screw until the desired handle detent tension is achieved.

To adjust handle tension:

1. Remove the side cover plugs of the handle that needs adjustment.
2. Turn the adjustment screw clockwise to increase tension on the control handle and counterclockwise to decrease tension.
3. Adjust the screw until the desired handle tension is achieved.



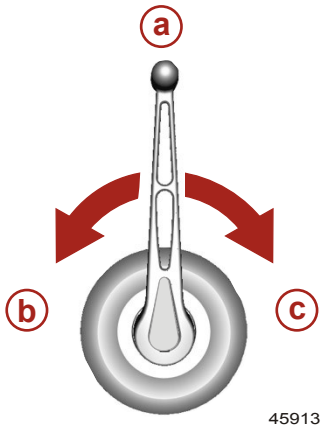
a - Detent tension adjustment screw
b - Handle tension adjustment screw

Optional SportFish Electronic Remote Control (ERC)—Operation and Adjustment

Operation

Operation of shift and throttle is controlled by the movement of the control handle. Push the control handle forward from neutral to the first detent for forward gear. Continue pushing it forward to increase speed. Pull the control handle back from neutral to the first detent for reverse gear. Continue pulling back to increase speed.

NOTE: *In certain modes, the gear position is determined by the electronic shift control, not the position of the ERC levers. When using the joystick, or while in Skyhook, the computer controls the shifting even though the ERC levers are in neutral.*



a - Neutral
b - Forward (port-mounted handle); reverse (starboard-mounted handle)
c - Forward (starboard-mounted handle); reverse (port-mounted handle)

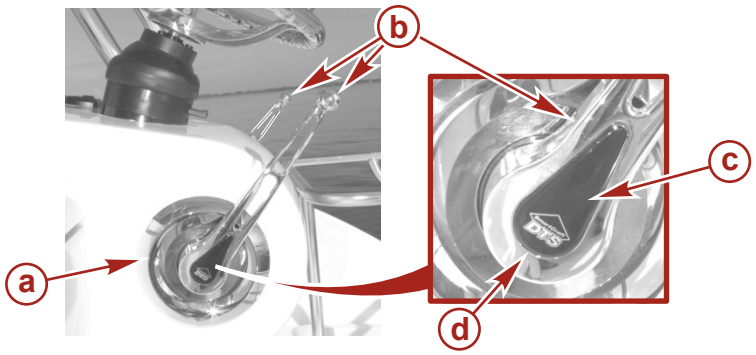
To help prevent unwanted motion of the handle, the amount of force needed to move the handle is adjustable.

Adjustment

NOTE: *The control handle tension and detent tension may require periodic maintenance using the adjustment screws.*

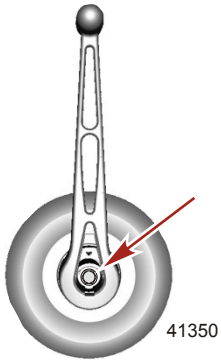
To adjust the ERC handle tension or detent tension:

1. Insert a suitable tool in the slot at the bottom of the emblem cover and pry the cover off.



a - Side cover (port-mounted handle)
b - Handle
c - Emblem cover
d - Slot

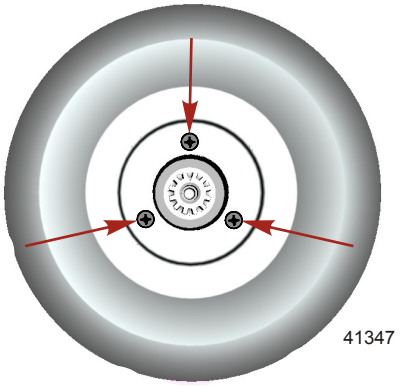
2. Remove the M8 screw and washer securing the handle.



Location of handle screw and washer

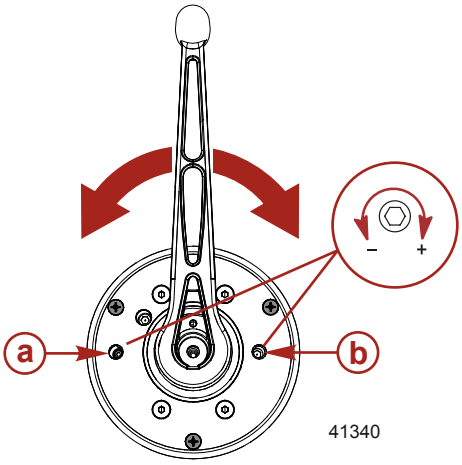
3. Remove the handle.

4. Remove the three M5 screws securing the side cover.



Location of side cover screws

5. Remove the side cover.
6. For adjustment, temporarily install the handle, washer and screw. Finger-tighten the screw.
7. To adjust the ERC handle detent tension:
   a. Turn the adjustment screw clockwise to increase tension on the control handle and counter-clockwise to decrease tension.
   b. Adjust to the desired tension.
8. To adjust ERC handle tension:
   a. Turn the adjustment screw clockwise to increase tension on the control handle and counter-clockwise to decrease tension.
   b. Adjust to the desired tension.



Side cover removed
a - Detent tension adjustment screw
b - Handle tension adjustment screw

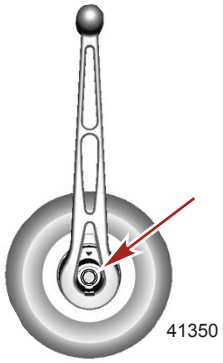
9. Remove the screw, washer, and handle when the adjustments are complete.
10. Install the side cover. Secure the cover with the three M5 x 10 mm screws. Tighten the screws to specification.

Description	Nm	lb-in.	lb-ft
Side cover screws	3.4	30	–

11. Apply adhesive to the threads of the handle screw.

Tube Ref No.	Description	Where Used	Part No.
7	Loctite 271 Threadlocker	Threads of handle screw	92-809819

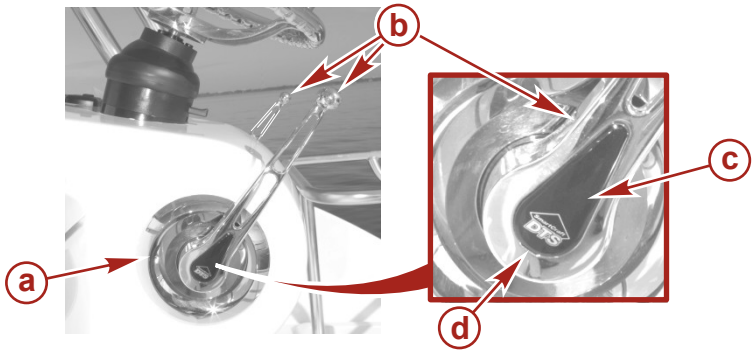
12. Install the washer and the M8 x 45 mm long screw. Tighten the screw to specification.



Location of handle screw and washer

Description	Nm	lb-in.	lb-ft
Handle screw	28.2	–	21

13. Install the emblem cover on the handle.

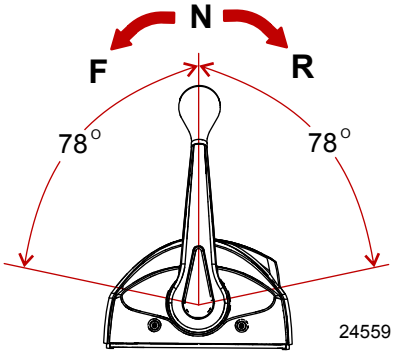


a - Side cover
b - Handle
c - Emblem cover
d - Slot

Dual Handle Yacht Console Control—Operation and Adjustment

Operation

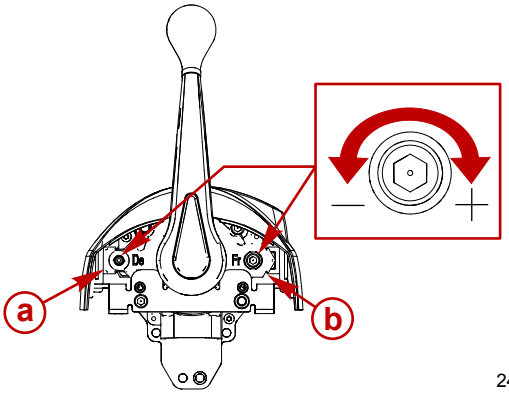
Operation of shift and throttle is controlled by the movement of the control handle. Push the control handle forward from neutral to the first detent for forward gear. Continue pushing the handle forward to increase speed. Pull the control handle back from neutral to the first detent for reverse gear. Continue pulling the handle back to increase speed.



Adjustment

1. Control handle tension adjustment screw - This screw can be adjusted to increase or decrease the tension on the control handle (cover must be removed). This will help prevent unwanted motion of the handle in rough water. Turn the screw clockwise to increase tension and counterclockwise to decrease tension. Adjust to tension desired.

2. Detent tension adjustment screw - This screw can be adjusted to increase or decrease the effort to move control handle out of detent positions (cover must be removed). Turning the screw clockwise will increase tension. Adjust to tension desired.



a - Detent tension adjustment
b - Control handle tension adjustment

Joystick Piloting for Outboard—Basic Operation

NOTICE
The vessel personality that determines how a boat responds to joystick commands was created for typical boat loading and operation in ideal boating conditions. Variations in wind, current, and boat loading will have a substantial effect on the performance of joystick operations. For example, a boat that is loaded heavily to the bow will behave differently than a boat that is loaded heavily to the stern. The vessel personality cannot anticipate nor compensate for these variables. It is the operator's responsibility to make the necessary corrections by changing the loading of the boat or by performing additional maneuvers to track the desired path.

The joystick offers intuitive control of your boat during low-speed operation and docking. In this mode, engine speed is limited from idle to approximately 30% engine demand to prevent excessive prop wash or unacceptable boat dynamics. In dock mode, engine demand is reduced to 70% of standard joystick mode (refer to **Section 2—Dock Mode**). The remote control levers must be used for vessel maneuvering if conditions require more thrust than the power ranges listed above.

Typical joystick location

Although joystick operation is intuitive, you should avoid using it until you have the opportunity to become familiar with the vessel's handling characteristics. Practice operating the vessel with the joystick in open water.

Thereafter, you should occasionally practice operating without the joystick in case the joystick becomes inoperable.

All of the remote control levers must be in the neutral position for the joystick to operate.

Engine Guardian Strategy

IMPORTANT: Boat speed can be reduced to idle and may not respond to the throttle during Engine Guardian.

The Engine Guardian system monitors the critical sensors on the engine for any indications of problems. Engine Guardian is functional whenever your engine is operating, so you never have to be concerned about whether or not you are protected. The system will respond to a problem by sounding the warning horn for six seconds and/or reducing engine power in order to provide engine protection.

If the Engine Guardian system has been activated, reduce the engine speed. The system must be reset before the engine will operate at higher speeds. Moving the throttle lever back to the idle position for three seconds will reset Engine Guardian. If Engine Guardian continues after the reset, the cause of the Engine Guardian must be identified and corrected.

Engine Guardian monitors:

- Oil pressure
- Coolant temperature
- Water pressure
- Engine overspeed
- Battery voltage

Should Engine Guardian engage on your vessel, the SmartCraft instrumentation will display the information and advise you to reduce throttle, if necessary. Engine Guardian may also reduce the engine speed if the situation requires it.

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

Low Battery Voltage Engine Guardian

Engine Guardian may gradually increase the engine idle speed in increments of 25 RPM to help compensate for a low battery voltage warning. The increase of RPM will be minimal and may not be noticed. When docking or maneuvering the vessel in close quarters, be aware the engine RPM may increase without movement of the remote control handle or joystick.

Preventing Cowl Collision Damage

The anti-collision cables on the front of the engines prevent cowl collision while the vessel is underway. Docking maneuvers with the joystick may cause the engines to splay towards the vessel's center of gravity. If the key switches are turned off while the engines are splayed, the engines will remain splayed. To prevent an accidental cowl collision, ensure that the engines are centered before turning them off.

To automatically center the engines after using the joystick, leave the key switches in the run position. Move the steering wheel through the steering motor's slight resistance or twist the joystick in either direction. Turn the keys to the off position.

Trim/Tilt Operation with Key Off—Cowl Collision

Joystick Piloting for Outboards incorporates a feature that allows the operation of the trim for a specific amount of time after the ignition key is turned to the off position. The trim motor is not directly controlled by the trim/tilt switch. It is controlled by computer software. The computer must receive a request to activate the trim. After the key is turned to the off position, trim motor activation is available for 15 minutes.

After the key switch is turned off, use the trim switch on the electronic remote control handle, or the dash-mounted trim switch. The engines will trim up, but they will remain in the steering position they were at when the key was turned off. The angle of the vessel transom, and how close each engine is mounted, has a direct effect on where the trim/tilt angle may allow the cowls to collide.

To avoid cowl collision when trimming up engines that are not operating, be sure to center the engines before turning them off.

Joystick Piloting for Outboard Features

Operating With an Auxiliary Joystick (If Equipped)

An auxiliary joystick located at a separate station called an auxiliary joystick station offers the same control of the boat as does a helm joystick. The operator may transfer to an auxiliary joystick station after meeting certain control requirements at the main helm.

There may be multiple auxiliary joystick stations located on the vessel. Each auxiliary joystick station is equipped with a joystick, an E-stop switch, and a control pad.

The auxiliary joystick station control pad includes:

- Indicator lights for drive train status (two lights for dual, three for triple, four for quad)
- A fault (alarm) indicator light and horn
- A transfer button equipped with an indicator light

Trackpad Buttons with the Power Icon

The power icon located on the buttons for Skyhook, auto heading mode, and track waypoint mode indicate that the buttons can engage or disengage the autopilot function they perform.

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 that has 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, unless another mode is currently active. If another mode is currently active, press the button on the active mode to disengage it, then press the button for the new mode.

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.

Joystick Piloting Functions

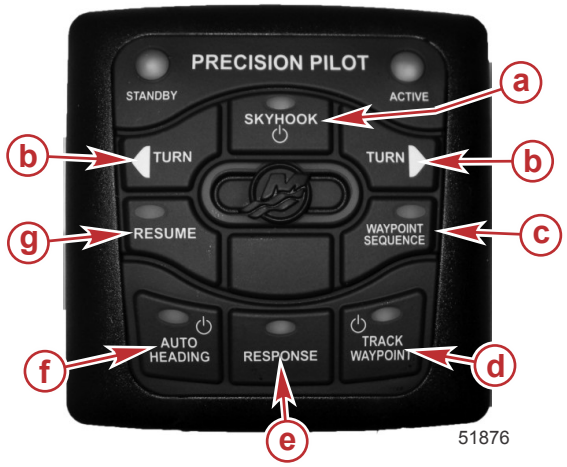
Joystick Piloting for Outboards is a fully integrated system using a GPS sensor, an electronic compass, a VesselView display, and an autopilot trackpad. A boat-manufacturer-supplied or customer-supplied NMEA-2000–compatible chartplotter must be integrated into the system to experience the complete capability of the outboard joystick piloting features. The system components communicate with one another and system controllers via a controller area network (CAN).

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.

The autopilot trackpad gives the operator control over the listed features.



Autopilot trackpad

- **a -** Skyhook
- **b -** Turn to port or starboard
- **c -** Waypoint sequence
- **d -** Track waypoint
- **e -** Response
- **f -** Auto heading
- **g -** Resume

Autopilot Trackpad Functions

Function	Description
Skyhook	Engages and disengages Skyhook station keeping. This mode is only available when the joystick is centered, at least two engines are running (see NOTE), GPS 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 itself down, it will enable Skyhook. Skyhook will not activate if the boat is underway. ***NOTE:*** *In order for Skyhook to operate, at least two engines must be operating:* • *For triple-engine applications, these must be the outer two engines.* • *For quad-engine applications, this must be at least one port and one starboard engine (i.e., both outers, both inners, port inner and starboard outer, or port outer and starboard inner). Skyhook will not operate with only the two starboard or the two port engines operating.*
Turn < and >	Each press of one of these buttons causes a 10° course change in auto heading. It affects no other autopilot features. ***NOTE:*** *Holding the joystick port or starboard until a beep is heard initiates a 1° change in course.*
Waypoint Sequence	Engages the waypoint sequence mode, driving the boat on a course set with multiple waypoints on the chartplotter. The waypoints must be on a route. See the chartplotter owner's manual. Waypoint sequence is available when **WAYPOINT SEQUENCE** is pressed, data (a NMEA-2000 stream) is available from a chartplotter, and the GPS and heading sensor signals are available. Waypoint sequence mode will automatically follow a route, announcing arrival at each waypoint and then turning towards the next waypoint. To engage the waypoint sequence mode, first enable track waypoint mode, and then select **WAYPOINT SEQUENCE**.

Function	Description
Track Waypoint	Route tracking is available when data (a NMEA-2000 stream) is available from a chartplotter and the 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 (unless waypoint sequence is active; see previous item). If arrival is not acknowledged, the autopilot will revert to auto heading mode, maintaining the heading used to arrive at the waypoint.
Response	Pressing the response button allows the vessel's captain to select how aggressively the system will respond to commands while using waypoint sequence, track waypoint, or Skyhook.
Auto Heading	Engages the 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 and electronic compass signals are available. (Refer to **Turn < and >** for course adjustment information.) This feature does not use the chartplotter.
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 override the autopilot, and the operator will assume control of the vessel. A slight resistance in the wheel gives the operator feedback that he is taking control from the autopilot. Shifting using the electronic remote control (ERC) lever will also disable the autopilot mode.*

Transporting a Joystick Piloting for Outboard Boat

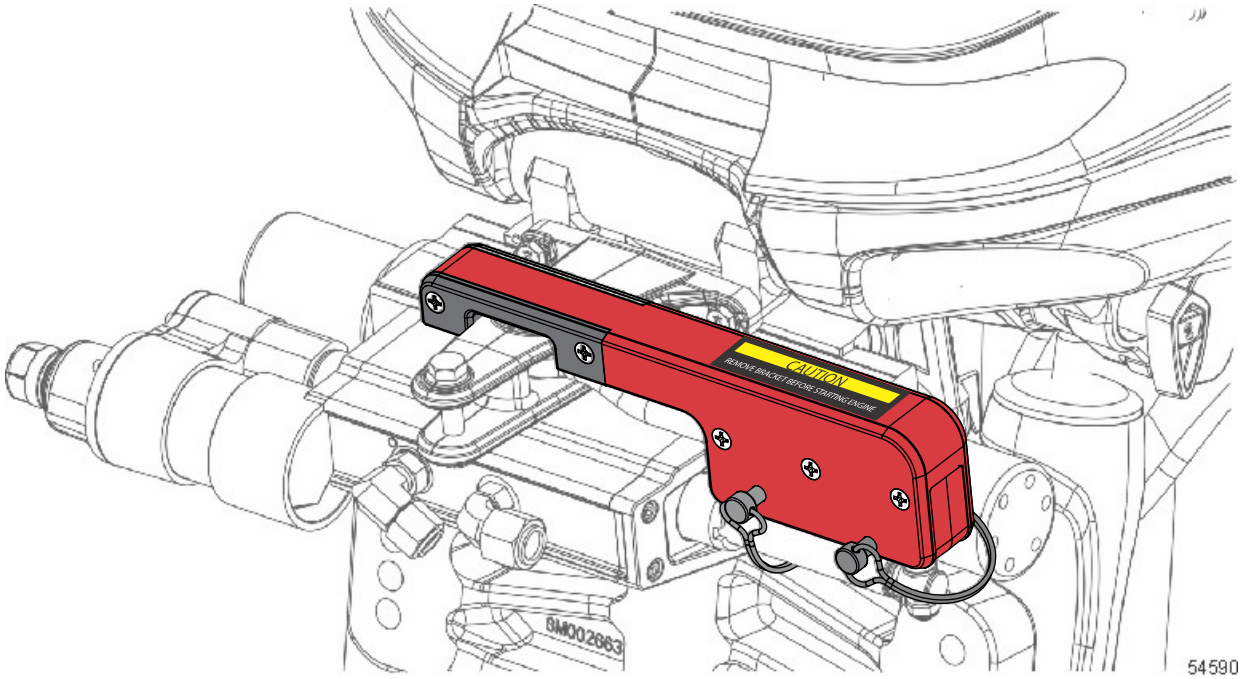
NOTICE
Avoid damage to the steering system from operation while locked. Turning the ignition key switches to the on or run positions with the steering locks in place can cause serious damage to the steering system. Always remove the steering locks before inserting the ignition keys into the switches.

The engines on a Joystick Piloting for Outboard boat are not connected by a tie bar and can move independently under the force of gravity and the vibrations incurred during transport, making it possible for the engines to contact each other.

To avoid the possibility of the engines making contact during transport:

1. Place the engines in their normal operating position.
2. Remove all ignition keys.
3. Remove the propellers (optional on short moves).
4. Place a steering lock for trailering over the tie bar arm and link rod for each of the outer engines, as shown.

   NOTE: *For triple- and quad-engine applications, the anticollision cables are sufficient to restrain the center/inner engines.*
5. Ensure that the steering lock is fully seated over the link rod.
6. Secure the steering locks with the supplied clips.



The engines may be raised to their full trailering position with the steering locks in place.

IMPORTANT: Always remove the steering locks before inserting the ignition keys into the switches.

Section 2 - On the Water

Table of Contents

Exhaust Emissions

Be Alert to Carbon Monoxide Poisoning

Carbon monoxide (CO) is a deadly gas that is present in the exhaust fumes of all internal combustion engines, including the engines that propel boats, and the generators that power boat accessories. By itself, CO is odorless, colorless, and tasteless, but if you can smell or taste engine exhaust, you are inhaling CO.

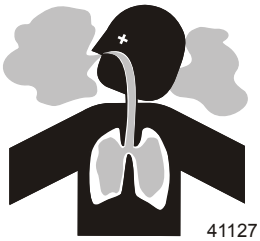
Early symptoms of carbon monoxide poisoning, which are similar to the symptoms of seasickness and intoxication, include headache, dizziness, drowsiness, and nausea.

⚠ WARNING

Inhaling engine exhaust gases can result in carbon monoxide poisoning, which can lead to unconsciousness, brain damage, or death. Avoid exposure to carbon monoxide.

Stay clear from exhaust areas when engine is running. Keep the boat well-ventilated while at rest or underway.

Stay Clear of Exhaust Areas



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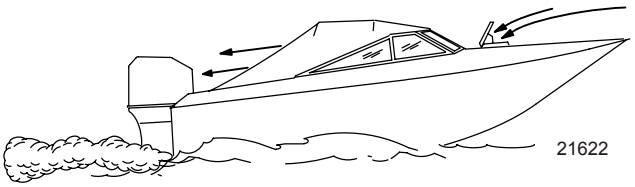
Engine exhaust gases contain harmful carbon monoxide. Avoid areas of concentrated engine exhaust gases. When engines are running, keep swimmers away from the boat, and do not sit, lie, or stand on swim platforms or boarding ladders. While underway, do not allow passengers to be positioned immediately behind the boat (platform dragging, teak/body surfing). This dangerous practice not only places a person in an area of high engine exhaust concentration, but also subjects them to the possibility of injury from the boat propeller.

Good Ventilation

Ventilate the passenger area, open side curtains or forward hatches to remove fumes.

Example of desired air flow through the boat:



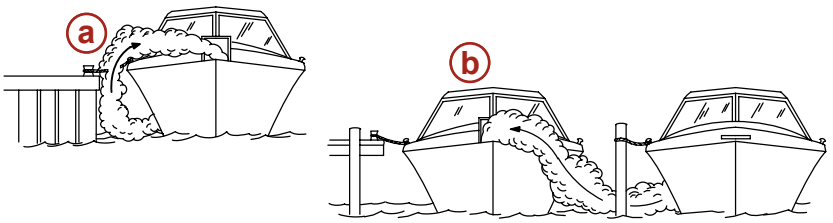
21622

Poor Ventilation

Under certain running and/or wind conditions, permanently enclosed or canvas enclosed cabins or cockpits with insufficient ventilation may draw in carbon monoxide. Install one or more carbon monoxide detectors in your boat.

Although the occurrence is rare, on a very calm day, swimmers and passengers in an open area of a stationary boat that contains, or is near, a running engine may be exposed to a hazardous level of carbon monoxide.

1. Examples of poor ventilation while the boat is stationary:



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a - Operating the engine when the boat is moored in a confined space

b - Mooring close to another boat that has its engine operating

2. Examples of poor ventilation while the boat is moving:

a - Operating the boat with the trim angle of the bow too high

b - Operating the boat with no forward hatches open (station wagon effect)

Safe Boating Suggestions

In order to safely enjoy the waterways, familiarize yourself with local and all other governmental boating regulations and restrictions, and also consider the following suggestions.

Mercury Marine strongly recommends that all powerboat operators complete a boating safety course. Courses are offered in the U.S.A. by the U.S. Coast Guard Auxiliary, the Power Squadron, the Red Cross, and your state or provincial boating law enforcement agency. Inquiries may be made to the Boating Safety Resource Center (www.uscgboating.org/) or the Boat U.S. Foundation (www.boatus.com/courseline/).

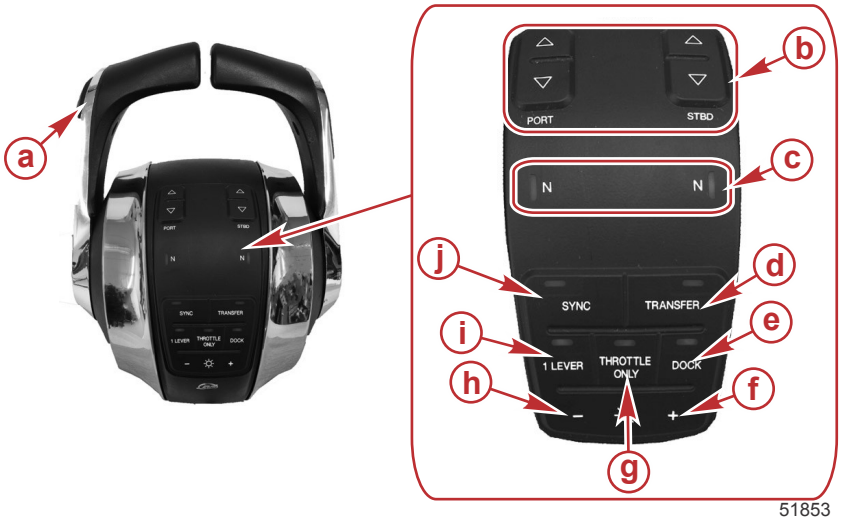
- **Know and obey all nautical rules and laws of the waterways.**
- **Perform safety checks and required maintenance.** Follow a regular schedule and ensure that all repairs are properly made.
- **Check safety equipment onboard.** Here are some suggestions of the types of safety equipment to carry when boating:
  - ☐ Approved fire extinguishers
  - ☐ Paddle or oar
  - ☐ Signal devices: flashlight, rockets or flares, flag, and whistle or horn
  - ☐ Transistor radio
  - ☐ Tools necessary for minor repairs
  - ☐ First aid kit and instructions
  - ☐ Anchor and extra anchor line
  - ☐ Waterproof storage containers
  - ☐ Manual bilge pump and extra drain plugs
  - ☐ Spare operating equipment, batteries, bulbs, and fuses
  - ☐ Drinking water
  - ☐ Compass and map or chart of the area
- **Watch for signs of weather change and avoid foul weather and rough-sea boating.**
- **Tell someone where you are going and when you expect to return.**
- **Passenger boarding.** Stop the engine whenever passengers are boarding, unloading, or are near the back (stern) of the boat. Shifting the drive unit into neutral is not sufficient.
- **Use personal flotation devices**. Federal law requires that there be a U. S. Coast Guard–approved, wearable-type life jacket (personal flotation device), correctly sized and readily accessible for every person aboard, plus a throwable cushion or ring. We strongly advise that everyone wear a life jacket at all times while in the boat.
- **Prepare other boat operators.** Instruct at least one person aboard in the basics of starting and operating the engine and handling the boat in case the driver becomes disabled or falls overboard.
- **Do not overload your boat.** Most boats are rated and certified for maximum load (weight) capacities. Refer to your boat capacity plate. Know your boat's operating and loading limitations. Know if your boat will float if full of water. When in doubt, contact your authorized Mercury Marine dealer/distributor or the boat manufacturer.
- **Ensure that everyone in the boat is properly seated.** Do not allow anyone to sit or ride on any part of the boat that was not intended for such use. This includes the backs of seats, gunwales, transom, bow, decks, raised fishing seats, and any rotating fishing seat; anywhere that sudden unexpected acceleration, sudden stopping, unexpected loss of boat control, or sudden boat movement could cause a person to be thrown overboard or into the boat. Ensure that all passengers have a proper seat and are in it before any boat movement.
- **Never be under the influence of alcohol or drugs while boating. It is the law.** Alcohol or drugs impairs your judgment and greatly reduces your ability to react quickly.
- **Know your boating area and avoid hazardous locations.**

- **Be alert.** The operator of the boat is responsible by law for maintaining a proper lookout by sight and hearing. The operator must have an unobstructed view particularly to the front. No passengers, load, or fishing seats should block the operator's view when operating the boat above idle or planing transition speed. Watch out for others, keep your eyes on the water, and be aware of your wake.
- **Never drive your boat directly behind a water-skier in case the skier falls.** In five seconds, your boat traveling at 40 km/h (25 mph) will overtake a fallen skier who was 61 m (200 ft) in front of you.
- **Watch fallen skiers.** When using your boat for waterskiing or similar activities, always keep a fallen or down skier on the operator's side of the boat while returning to attend to the skier. The operator should always have the down skier in sight and never back up to the skier or anyone in the water.
- **Report accidents.** Boat operators are required by law to file a boating accident report with their state boating law enforcement agency when their boat is involved in certain boating accidents. A boating accident must be reported if 1) there is loss of life or probable loss of life, 2) there is personal injury requiring medical treatment beyond first aid, 3) there is damage to boats or other property where the damage value exceeds US $500.00 or 4) there is complete loss of the boat. Seek further assistance from local law enforcement.

Getting Started

Digital Throttle and Shift (DTS) Features

The DTS system features several operational modes for the electronic remote control (ERC) levers. Any of the listed features can operate simultaneously.



Dual-engine ERC

- **a -** Trim control (handle)
- **b -** Trim control (trackpad)
- **c -** Neutral lights
- **d -** Transfer function
- **e -** Dock mode
- **f -** + (increase brightness)
- **g -** Throttle-only mode
- **h -** – (decrease brightness)
- **i -** Single-lever control
- **j -** Synchronization feature

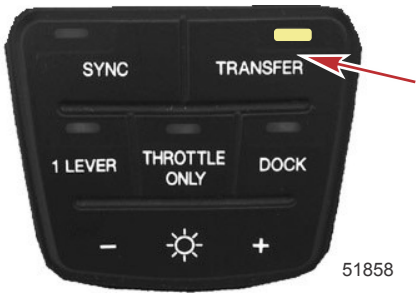
Dash-mounted DTS trackpad

Control	Function
Trim control	Raises and lowers the engines for best efficiency, or for conditions such as shallow water or trailering.
NEUTRAL (lights)	Illuminate when the engine is in the neutral gear position. The lights flash when the engine is in throttle-only mode.
TROLL	Limits the boat to idle forward at an idle speed up to 1700 RPM. Use the + and – buttons to increase or decrease the speed. ***NOTE:*** *The troll feature is not available on ERC-mounted trackpads, only dash-mounted. For vessels equipped with ERC-mounted trackpads, the troll feature can be accessed from VesselView.*

Control	Function
TRANSFER	Allows boat control to be transferred to a different helm. Refer to **Helm Transfer**.
DOCK	Available with joystick operation and the control levers. • Joystick operation reduces throttle capacity to approximately 70% of normal joystick throttle demand. • Control lever operation reduces throttle capacity to approximately 50% of normal control lever throttle demand.
THROTTLE ONLY	Allows the boat operator to increase engine RPM without shifting into gear. Refer to **Throttle-Only Mode**.
1 LEVER	Enables the throttle and shift functions of all engines to be controlled by the port lever. Refer to **Single Lever Mode**.
SYNC	Turns the auto-synchronization feature off or on. Refer to **Synchronizing Engines**.
+ (increase) and **–** (decrease)	Increases and decreases brightness settings for the trackpad, VesselView display, and SmartCraft gauges. ***NOTE:*** *On dash-mounted DTS trackpads, these buttons increase or decrease the trolling speed.*

Transfer (Boats Equipped with Dual Helms)

The transfer function 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 **Helm Transfer**.



Transfer button and light

Dock Mode

Dock mode reduces the RPM throughout the throttle lever range by 50%, allowing finer control of engine power in close-quarter situations. If more power is needed for vessel maneuvering when environmental conditions require more thrust, use the electronic remote control levers.

NOTE: *When the joystick is enabled, dock mode reduces available power to 70% of the already reduced power available with the joystick.*

To engage dock mode:

1. Place both ERC levers in neutral.
2. Press the dock button located on the DTS trackpad.
3. The dock light turns on.
4. Place either ERC lever into gear.

   NOTE: *Engine RPM and available power will be proportionately reduced throughout the throttle lever range.*

Dock button and light

To disengage dock mode:

1. Bring both ERC levers to any detent or neutral.

   NOTE: *Dock mode disengages only when the levers are moved into a detent.*

2. Press **DOCK**. The dock light turns off.

Throttle-Only Mode

Moving the joystick whenever the engines are running and the ERC levers are in the neutral position will command the boat to move. **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 mode will avoid unintended gear engagement. The engines will turn using the steering wheel or the joystick and the RPM of the engines can be increased while in throttle-only mode, but the gear position will remain in neutral.

Throttle-only button and light

To engage throttle-only mode:

1. Place both ERC levers in neutral.
2. Press **THROTTLE ONLY** on the DTS trackpad. The throttle-only light will turn on and the neutral lights will blink.
3. 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 mode, but the outboard will remain in neutral.

   NOTE: *Throttle-only mode also affects the joystick. The engines will move and the RPM can be increased, but the outboards will remain in neutral.*

4. The RPM of the engines can be increased.

To disengage throttle only mode:

1. Place both ERC levers into neutral. Throttle-only mode will not disengage unless the ERC levers are in neutral.

   NOTE: *Pressing* ***THROTTLE ONLY*** *while the ERC levers are in gear will only turn off the throttle-only light. The engines will remain in throttle-only mode until the operator returns the levers to the neutral position.*

2. Press **THROTTLE ONLY**. The throttle-only light will turn off.
3. The neutral lights stop flashing and remain illuminated. Either the ERC levers or the joystick can now be used to control the boat's movement.

Single-Lever Mode

Joystick piloting features the ability to command all engines with a single lever. This feature simplifies engine management. Single-lever mode has no affect on the joystick function. It is not the same as the system feature called Sync.

Single-lever button and light

To engage single-lever mode:

1. Place both ERC levers in neutral.
2. Press **1 LEVER** on the DTS trackpad. The single-lever light will turn on.

3. Place the starboard ERC lever into gear.
4. Engine RPM will increase and decrease in sync, while the gear remains the same.

To disengage single-lever mode:

1. Place both ERC levers in neutral.
2. Press **1 LEVER**. The single-lever light will turn off.

Synchronizing Engines

Sync mode is an automatic engine-synchronization feature that engages automatically at key-up. Sync mode monitors the position of both ERC levers. If both the levers are within 10% of one another, all engines synchronize to the starboard engine's RPM. The SmartCraft system will automatically disengage sync at the last 10% of the lever range to allow each engine the ability to reach the maximum available RPM. Sync mode cannot engage until its minimum RPM is met.

The indicator light on the sync button will be on when all engines are on. The light is yellow at idle and 95% of throttle and when the engines are not synchronized. The light turns red when the engines are synchronized.

Sync button and light

VesselView shows an orange icon if the engines exceed an RPM difference of 10% of one another. The icon turns red when they synchronize. The icon turns off when sync mode is off.

To disengage sync mode:

1. Place the ERC levers into any detent.
2. Press **SYNC**. The sync light turns off.

To reengage sync mode, press the sync button at any time.

Traditional Maneuvering with Steering and Thrust

The addition of Joystick Piloting for Outboard to your boat expands its maneuvering capability at slow speeds. However, you can still maneuver your vessel using traditional steering and throttle controls at both planing and slow speeds. Mercury Marine recommends practicing low speed and docking maneuvers with your boat using only the steering wheel and ERC levers, to ensure that you can safely control your boat in the unlikely event that the joystick fails.

To Maneuver the Boat in Forward or Reverse

Place one or all of the engines into 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, increase the power to the outside engine.

To Spin the Boat at Low Speeds

- Turn the engines so that they are 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 is typically needed to compensate for the greater thrust created by the engine in forward gear.

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.

NOTICE
The vessel personality that determines how a boat responds to joystick commands was created for typical boat loading and operation in ideal boating conditions. Variations in wind, current, and boat loading will have a substantial effect on the performance of joystick operations. For example, a boat that is loaded heavily to the bow will behave differently than a boat that is loaded heavily to the stern. The vessel personality cannot anticipate nor compensate for these variables. It is the operator's responsibility to make the necessary corrections by changing the loading of the boat or by performing additional maneuvers to track the desired path.

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. You can move and rotate the joystick at the same time, allowing intricate movements in tight quarters.

The computer control system automatically calculates the steering angle of each engine, 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 commands the engines to apply sideways thrust to the boat. Rotating the joystick prompts the computer to command forces that rotate the boat about its center.

The joystick is proportional, which means the greater distance from the center that the joystick is moved, the more thrust that is applied to move the boat in that direction. The available demand on the engine is limited while using the joystick.

For joystick control of the boat:

1. At least two engines must be running for the joystick to operate.
   - For triple-engine applications, these must be the outer two engines.
   - For quad-engine applications, this must be at least one port and one starboard engine (i.e., both outers, both inners, port inner and starboard outer, or port outer and starboard inner). The joystick will not operate with only the two starboard or the two port engines running.
2. For best control, trim all engines to the full-down position and allow the auto trim function to adjust the engines to the optimal trim angle.
   - If the engines are already trimmed down, the operator need not change the trim. The computer controlled system will automatically trim the engines up to the vessel propulsion personality predetermined angle when the joystick is engaged.
   - If the engines are trimmed up, the operator should manually adjust the trim to full down, provided doing so does not create a hazard. The system will not automatically trim the engines down when the joystick is engaged.
   - For more details, refer to **Auto Trim**.

   IMPORTANT: After joystick operation and before attempting to put the vessel on plane, the trim position must be set to an angle that allows for normal operation. The computer controlled system will not return the engines to the position they were at before the joystick was engaged.
3. Move all of the electronic remote control levers to neutral. For Zero Effort controls, shift into neutral and place the throttle levers at idle.
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.

NOTE: *The joystick does not have detents. It can be positioned at any of the indicated arrows or anywhere in-between.*

- **a -** Forward
- **b -** Crab to forward by starboard
- **c -** Lateral to starboard
- **d -** Crab to reverse by starboard
- **e -** Reverse
- **f -** Crab to reverse by port
- **g -** Lateral to port
- **h -** Crab to forward by port
- **i -** Port yaw
- **j -** Starboard yaw

Centering the Engines after Joystick Operation

Upon releasing the joystick, the engines will remain in their last commanded position, unless the last command was yaw (twisting the joystick). To center the engines, move the steering wheel past its electronic detent or twist the joystick.

Moving the ERC Handles while in Joystick Mode

If the ERC handles are moved while the joystick is in operation, a noncritical fault will be set in the system. A six-second intermittent beep will sound, an ERC override fault will be displayed on the VesselView, and the ERC will take command of the vessel from the joystick. Once the ERC handles are returned to neutral, the joystick can again assume control of the vessel.

Auto Trim

The Joystick Piloting for Outboard system includes an auto trim feature that works with Skyhook station keeping and joystick operations. This feature will automatically trim the engines up or down to a position preset by the boat manufacturer.

Enabling Auto Trim

Auto trim is enabled whenever the ERC levers are moved into a gear and then back into neutral, or when the engines are started.

Auto Trim Up

When the operator assumes control of the vessel with the joystick, auto trim will raise any engine that is trimmed below the preset position to that preset position, provided that auto trim has been enabled as described above. Auto trim will similarly raise the engines when Skyhook is engaged. Once the engines have been trimmed up to the preset point, auto trim is disabled and can only be reenabled as described previously.

Auto Trim Down

When the operator assumes control of the vessel with the joystick and one or more engines is trimmed above the preset position, a pop-up notice will appear on the VesselView display. Similarly, if Skyhook is engaged with one or more engines trimmed above the preset, the pop-up will appear. This notice will disappear after only 10 seconds, but the operator is provided a full 15 seconds during which to initiate the auto trim down function.

To initiate auto trim down, briefly press the trim all down button on the ERC or trim pad. Any engine trimmed above the preset position will be automatically trimmed down to the preset position. To halt the auto trim down of a particular engine, push either trim button (up or down) for that engine. To halt the auto trim down of all engines, push either trim all button.

IMPORTANT: The preset position for auto trim is accurate to ± 3°, meaning that auto trim in either direction can overshoot by as much as 3°. If one or more engines are auto trimmed up and the remaining engines are auto trimmed down, the engines may be trimmed differently by as much as 6°. This is not a malfunction.
To bring all engines to the same auto trim position:

1. **With the engines off, but the key switches on, trim all engines to their full down position. Hold the trim button for an additional three seconds.**
2. **Start the engines.**
3. **Reenable auto trim.**
4. **Reengage the joystick or Skyhook. The engines will all auto trim up to the same position.**

Helm Transfer

Some boats are designed to allow control of the vessel from more than one location. These locations are commonly referred to as helms or stations. Helm transfer is a term used to describe the method of transferring control from one helm (or station) to another helm.

⚠ 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.

The helm transfer function allows the boat operator to select which helm is in control of the vessel. Before a transfer can be initiated the ERC levers at the active helm and at the helm intended for the transfer must be in the neutral position.

NOTE: *If you attempt to transfer helm control when the ERC levers are not in neutral, a beep will sound and the helm transfer will not succeed until the levers at the helms are moved to neutral and transfer is requested again.*

Some fault codes may appear on VesselView if other control or navigation functions are attempted after the helm transfer procedure is started. To remove the fault codes it may be necessary to cycle the key switch off and on, and then restart the helm transfer procedure. Ensure that other control and navigation inputs are performed after helm transfer is complete to avoid setting fault codes.

NOTICE

The ERC levers must be in neutral to perform a helm transfer. While in neutral your vessel could drift and collide with objects nearby resulting in damage. Keep an adequate look out while performing the helm transfer.

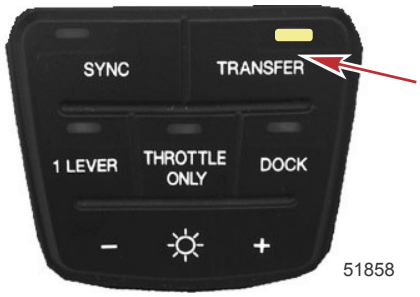
To avoid damage, use extra care when attempting a helm transfer while the vessel is close to docks, piers, or other fixed items or when near other vessels.

Requesting Helm Transfer

NOTE: *Any movement of the joystick or ERC levers after pressing the transfer button terminates the helm transfer request. A single beep sounds and the transfer button light turns off signaling the end of the transfer request.*

To request the transfer of vessel control from one helm to another:

1. At the helm you are requesting be made active and with the ERC levers in neutral, press the transfer button one time. After the transfer button is pressed, the transfer light turns on and one beep will sound confirming the impending transfer.



Transfer button and light

NOTE: *If the ERC levers at the helms are not in neutral, the neutral lights will flash. Move all the ERC levers to neutral and the neutral light will stop flashing.*

2. With the transfer light and neutral light on, press the transfer button a second time to complete the helm transfer.
3. When the helm transfer is complete, another beep sounds and the transfer light turns off.

   NOTE: *If the helm transfer is not completed in 10 seconds, the request is automatically cancelled and a double beep sounds. Control will remain at the existing active helm. Press the transfer button again to restart helm transfer.*
4. The helm where the transfer request was initiated is now active and controls the vessel.

Helm Transfer and Autopilot

Transferring control from an active helm to an inactive helm (from one station to another station) affects the functionality of autopilot modes. Some of the effects are listed.

- Auto heading mode is disengaged when the ERC levers are moved to neutral for helm transfer. You must re-engage auto heading at the newly active helm.

- Requesting a helm transfer places the autopilot into standby mode. Any required inputs will need to be re-entered at the newly active helm.
- If engaged, Skyhook will disengage when the transfer button is pressed the second time. If desired, Skyhook must be re-engaged at the newly active helm.
- The resume feature for the auto heading function does not transfer automatically. After engaging the previous auto heading course at the newly active helm, the resume feature works the same as at any active station.
- In track waypoint mode the control of the route and display of route data on your chartplotter does not automatically transfer to the chartplotter at the requested helm. You must turn on the chartplotter at the newly active helm, input the waypoint or waypoint route to be tracked, and re-engage track waypoint mode.

Autopilot Trackpad Features

Chartplotter Requirements

Many of the features and functions of autopilot use information from a chartplotter. However, not all chartplotters have 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 Marine. These chartplotters use specific software to meet the stringent demands to properly interface with the autopilot and the Joystick Piloting for Outboard 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 authorized dealer or call Mercury Customer Service for a list of approved chartplotters.

Response Settings

Press the response button to increase or decrease how aggressively the vessel reacts to programmed changes when in autopilot modes. How aggressively the vessel reacts equals a response setting in VesselView. Each time you press **RESPONSE**, the response light blinks to indicate you changed the response setting for that mode.

Number of blinks	Response setting indicated	Aggressiveness of correction
1	1	Mild (for gentle or calm conditions)
2	2	Medium (for moderate conditions)
3	3	Aggressive (for severe conditions)

VesselView Autopilot Screen

The VesselView autopilot screen displays:

- The angle of the drives when in standby mode
- A digital compass value of the current heading
- Three icons to indicate the currently selected response level
- Engine RPM

NOTE: *Not all of the functions of the autopilot work when DTS functions are engaged. Disengage the DTS functions to use the autopilot functions.*

Quad-engine display

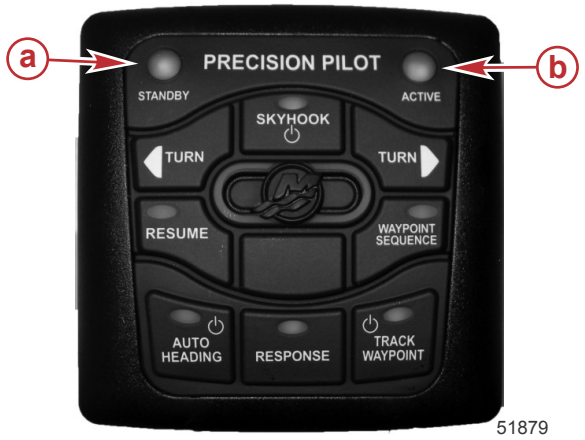
a - Heading
b - Drive angle reference
c - Engine RPM
d - Response level

Autopilot Trackpad Lights

The autopilot trackpad includes lights to indicate when an autopilot mode is active (engaged) or in standby (disengaged). If the standby light is illuminated, then the autopilot is disengaged (off). If the active light is illuminated, then the autopilot is engaged (on).

Pressing the button for auto heading, track waypoint, or Skyhook will engage that mode, turning on both its respective light and the active light.

NOTE: *The standby light will flash on and off when the system is attempting to acquire the necessary GPS signals.*



a - Standby light
b - Active light

Autopilot Modes

⚠ WARNING

Avoid serious injury or death. Inattentive boat operation can result in a collision with other watercraft, obstacles, swimmers, or underwater terrain. The autopilot navigates a preset course, and does not automatically respond to hazards in the vicinity of the boat. The operator must stay at the helm, ready to evade hazards and warn passengers of course changes.

The autopilot includes 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 familiar with the operation of that chartplotter and GPS unit before attempting to use the autopilot to steer your vessel. The autopilot does not control speed, only direction, and it cannot 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.

When using the autopilot with 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 chartplotter establishes a zone called an arrival circle around the point, and the autopilot will announce arrival at the waypoint when the boat enters that zone.

Skyhook Station Keeping

Your vessel may be equipped with the Skyhook station keeping feature. This system uses global positioning system (GPS) technology 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 approximate area. The size of this area is affected by the accuracy of the global positioning 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 (for example, bridges or buildings) and trees. Under some of these conditions Skyhook may be affected enough that the system will disengage. The operator must remain at the helm whenever Skyhook is engaged and be vigilant for changing conditions such as the presence of other vessels or swimmers or the disengagement of Skyhook.

Under typical operating conditions, Skyhook is capable of holding the vessel within a radius of 10 m (30 ft). However, this distance may sometimes increase to a radius of 30 m (100 ft). Because Skyhook holds the boat in an approximate position, not a precise one, it can cause your boat to collide with other objects close to your boat and cause damage. Do not use Skyhook when your boat is close to a dock, piling, bridge, another vessel, or swimmer.

⚠ WARNING

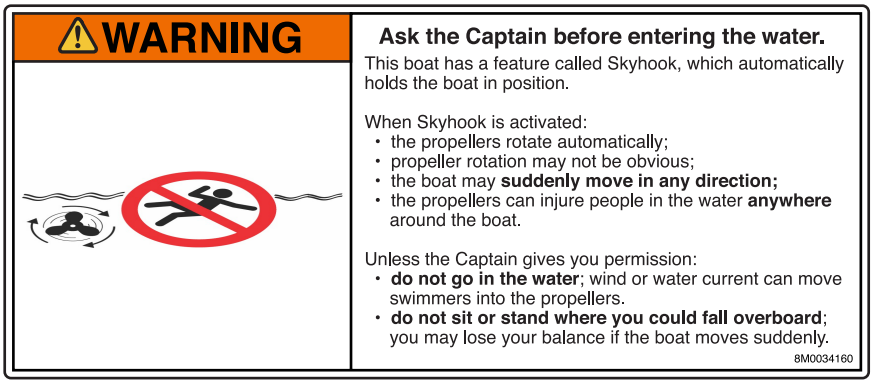
Skyhook is an automatic system. Use of this system does not relieve the operator of the responsibility to remain at the helm and keep watch for changing conditions. The presence of swimmers or other vessels, or if Skyhook becomes disengaged, will require the operator to assume manual control of the vessel.

Important Safety Considerations

Activities in the water near the vessel while Skyhook is engaged may result in injury. The operator should read and observe the warning labels on the boat, and instruct passengers how Skyhook operates before using the feature.

52820

Label near the autopilot trackpad



52821

Label in the vicinity of the transom boarding area

IMPORTANT: If either of these labels cannot be located or are not legible, they must be replaced before engaging Skyhook. For replacement labels, contact the manufacturer of your boat or a Mercury Marine authorized repair facility.

Before engaging (activating) Skyhook, the operator must:

1. Inform passengers how Skyhook operates, to stay out of the water and off the swim platform and boarding ladder, and to be alert for any sudden shifts in the boat position.
2. Inform passengers of any audible or visual warning systems that may be installed on the boat, and when they can expect them to be active.
3. Check to see that no one is near the back of the boat or anywhere in the water near the boat.

After engaging (activating) Skyhook, the operator must:

1. Remain at the helm and maintain a vigilant watch.
2. Disengage (deactivate) Skyhook if anyone enters the water or approaches the boat from the water.

⚠ 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.

Engaging Skyhook

Skyhook will not engage unless the joystick and control levers are in neutral.

1. Maneuver the boat to the desired position.
2. Ensure that at least two engines are operating:
   - For triple-engine applications, these must be the outer two engines.

- For quad-engine applications, this must be at least one port and one starboard engine (i.e., both outers, both inners, port inner and starboard outer, or port outer and starboard inner). Skyhook will not operate with only the two starboard or the two port engines running.

3. Ensure that the ERC levers are in neutral.
4. Confirm that the area around the boat is clear of swimmers and obstacles.
5. Press the Skyhook button.

   NOTE: *A double horn beep sounds if the Skyhook mode does not engage.*

When the Skyhook button is pressed on the autopilot trackpad, VesselView will display the Skyhook warning pop-up.

51861

After the warning pop-up has been acknowledged, VesselView will display a Skyhook warning and show the gear positions in orange.

55809

a - Skyhook warning
b - Gear position

Disengaging Skyhook

Skyhook can be disengaged several different ways:

- Move the steering wheel.
- Press the Skyhook button on the autopilot trackpad.
- Move the joystick and return to the original neutral position.
- Move the ERC levers.
- Turn off one or more engines.

Skyhook does not automatically resume when the steering wheel, levers, or joystick are returned to their original position. The Skyhook button must be pressed again to reengage the feature.

Using Skyhook

IMPORTANT: For triple-engine and quad-engine applications, Skyhook can operate with as few as two operating engines (refer to Engaging Skyhook). Never attempt to start a nonoperating engine with Skyhook already engaged.

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. Practice with Skyhook to determine what works best for your vessel in various situations.

In extreme weather and sea conditions, Skyhook may not be able to maintain a vessel's heading and position. This is especially true if the vessel's heading is perpendicular to the wind or current. If the wind or current forces the vessel away from the position where Skyhook was set, Skyhook will start to turn the bow of the vessel back to the original set point. As the vessel is pushed further away, Skyhook will continue to rotate the bow to the set point until the bow eventually points directly at the set point.

- If at any time in this process Skyhook is able to overcome the conditions enough to hold a position, it will cease turning the bow.
- If the conditions lessen and Skyhook is able to maneuver the vessel back toward the original set point, Skyhook will rotate the bow back to the original heading as it maneuvers the vessel toward that set point.
- If the vessel is forced far enough away from the set point, Skyhook will notify the operator that it is not able to maintain position. Skyhook will continue to attempt to return to the set point, unless the operator assumes control of the vessel.

To minimize the effects of extreme conditions on the operation of Skyhook, Mercury Marine recommends adjusting the vessel's heading so that its bow (or for some vessels, its stern) faces into the wind or the current.

Skyhook can unexpectedly disengage due to a loss of engine power or GPS signal. If this happens Skyhook will sound an alarm, the engines 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.

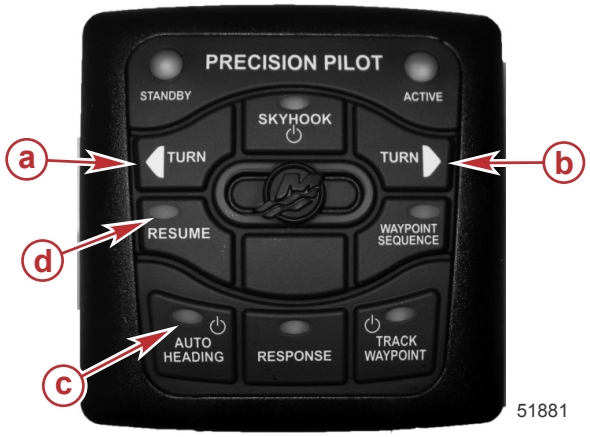
Auto Heading

Auto heading allows the boat to automatically maintain a compass heading while the boat is underway.

Engaging Auto Heading

1. Ensure that the starboard engine key switch is in the run position.
2. Place at least one running engine in forward gear.

   NOTE: *Auto heading does not function with the ERC levers in neutral or reverse.*
3. Steer the boat to the desired compass heading.
4. Press the auto heading button. The button illuminates and a single beep sounds acknowledging engagement. A double horn beep sounds if the auto heading mode does not engage.



a - Port turn (course adjust) button
b - Starboard turn (course adjust) button
c - Auto heading button and light
d - Resume button and light

- The VesselView screen will change to autopilot.
- The steering wheel will self-center and be held in an electronic detent position.

  NOTE: *If you must turn the steering wheel for any reason, you will need to apply sufficient force to overcome the electronic detent.*

- The autopilot will hold the compass heading that the boat was following when **AUTO HEADING** was pressed.

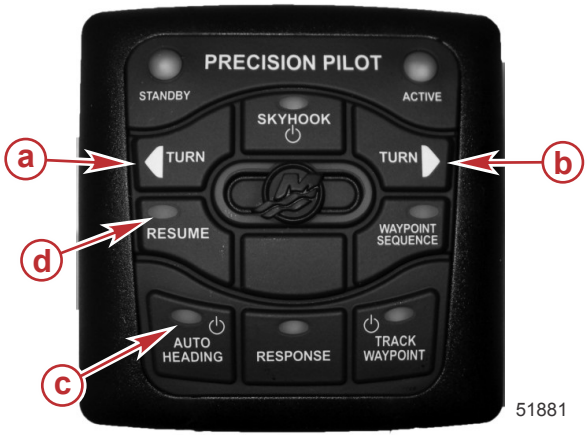
51882

5. To adjust your course while in auto heading mode, refer to **Course Adjustment Using the Turn Buttons or Joystick**.
6. To disengage auto heading mode, refer to **Disengaging Auto Heading**.
7. Press **AUTO HEADING** a second time to place autopilot in standby mode and turn off all lights other than the standby light.

Course Adjustment Using the Turn Buttons or Joystick

While in auto heading mode, the turn buttons (course adjust buttons) change the set course heading each time they are pressed. Holding the joystick left or right for one second will also adjust your course.

- Press the turn button in the direction of the desired heading change. Each press of the button changes the desired heading by 10°.



51881

a - Port turn (course adjust) button
b - Starboard turn (course adjust) button
c - Auto heading button and light
d - Resume button and light

- Deflect and hold the joystick in the desired direction for one second to make small adjustments in the chosen heading. Each recognized movement adjusts the chosen heading by 1°.

NOTE: *The joystick must move over 50% of its travel for the movement to be recognized as input. A beep will sound.*

24707

Adjusting heading to starboard

To Resume a Heading

The resume light is on if the previous course heading is available to resume.

IMPORTANT: The previous heading can only be resumed within four minutes of the auto heading being disengaged by turning the wheel past the detent or if the vessel has been turned no more than 90°.

Press the resume button to resume the previous heading, if you turned the steering wheel and disengaged auto heading.

Disengaging Auto Heading

1. Disengage the auto heading mode with any of the following actions:
   - Place the ERC handles for all engines in neutral. The auto heading light turns off and the standby light comes on.
   - Turn the steering wheel beyond the electronic detent. The auto heading light turns off and the resume light comes on.
   - Press the auto heading button on the autopilot trackpad. The auto heading light turns off and the standby light comes on.
2. A single beep sounds and the VesselView display will turn gray, showing that the mode is in standby.
3. If the resume light is on, you can press **RESUME** to resume the course in auto heading. Refer to **To Resume a Heading**. If you do not wish to resume the course, press the auto heading button once to enter standby mode.

51883

4. If the standby light is on and the resume light is not, you cannot resume your course by pressing the resume button. Refer to **To Resume a Heading**. Press the auto heading button to fully exit the auto heading mode.

Track Waypoint

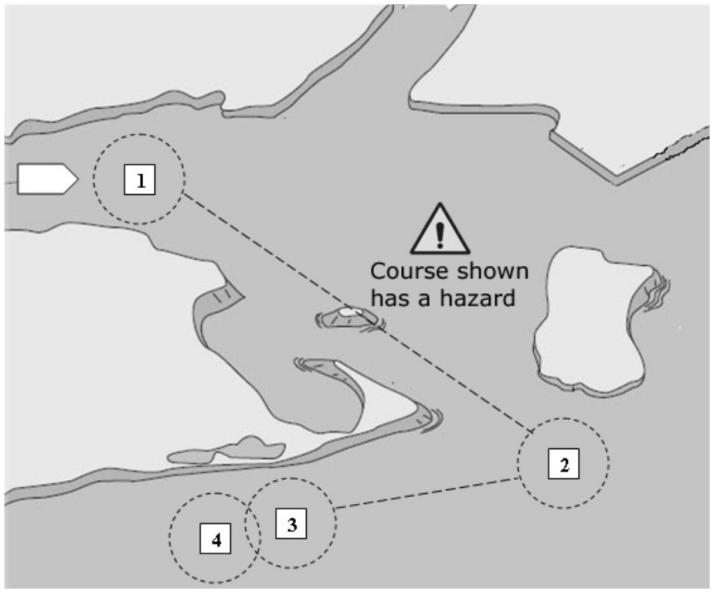
⚠ WARNING

Avoid serious injury or death. Inattentive boat operation can result in a collision with other watercraft, obstacles, swimmers, or underwater terrain. The autopilot navigates a preset course, and does not automatically respond to hazards in the vicinity of the boat. The operator must stay at the helm, ready to evade hazards and warn passengers of course changes.

Track waypoint allows the boat to automatically navigate to a specific waypoint or sequence of waypoints, called a waypoint route. This feature is intended for use in open waters, free from obstructions above and below the waterline.

Using the example route shown in the following illustration:

- Waypoints are shown in numbered squares within the arrival circle (a dashed-line circle around the numbered square).
- A hazard is present between waypoints 1 and 2. If these waypoints are used for the route, the autopilot will attempt to navigate through the hazard. It is the captain's responsibility to select waypoints that avoid all hazards.
- Waypoint 4 is too close to 3 to be used in the same route. Waypoints must be far enough apart that the arrival circles do not intersect.
- A route, including waypoints 1, 2, and 3, is represented by the straight dashed-line. The autopilot system will attempt to navigate this route. It is the responsibility of the captain to ensure that the route does not contain any hazards, and to keep watch while underway.



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Example route

When the track waypoint feature is activated and the boat is put into operation:

- The operator must remain at the helm at all times. The feature is not designed to allow unattended operation of the vessel.
- Do not use track waypoint as the sole source of navigation.

IMPORTANT: Track waypoint can be used only with chartplotters approved by Mercury Marine.

Waypoint data needs to be provided to VesselView by a third-party chartplotter. The arrival radius must be set to 0.05 nautical miles or less. Refer to the chartplotter's user manual for details.

The accuracy of the feature can be affected by environmental conditions and incorrect use. Observe the following information when using the track waypoint and waypoint sequencing feature.

Waypoint data—distance settings	
Between waypoints	Greater than 1.0 nautical mile (1.15 mile)
Arrival alarms	No less than 0.1 nautical mile (0.12 mile)

Engaging Track Waypoint Mode

To engage the track waypoint mode:

1. Turn on the chartplotter and select a single waypoint or waypoint route to be tracked.
2. Place at least one ERC lever in forward gear. Track waypoint does not function if both levers 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.

⚠ 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.

4. Press **TRACK WAYPOINT** on the autopilot trackpad.
   - The track waypoint light turns on and a single beep sounds, indicating track waypoint mode is engaged.
     NOTE: *Two horn beeps sound if track waypoint mode does not engage.*
   - The autopilot tracks to the first waypoint on the chartplotter course.

Track waypoint button and light

5. VesselView displays the autopilot track waypoint. The display shows the digital heading that the boat is traveling and that the autopilot is locked bearing to waypoint (BTW).

NOTE: *The autopilot trackpad turn buttons will not initiate turns while the track waypoint mode is engaged. Turn features are only available in auto heading mode.*

Disengaging Track Waypoint Mode

Disengage the track waypoint mode by one of the following methods:

- Press **TRACK WAYPOINT** on the autopilot trackpad. The track waypoint light turns off and the standby light turns on.
- Turn the steering wheel hard enough to overcome the force feedback. The autopilot enters standby.
- Move both ERC levers to neutral. The autopilot enters standby mode.
- Press **AUTO HEADING**. The autopilot enters auto heading mode.
- Turn off the chartplotter. The autopilot enters standby mode.

Turn Buttons in Track Waypoint Mode

While in track waypoint mode, pressing the left or right turn buttons on the autopilot trackpad changes the mode to auto heading.

Auto Heading Button in Track Waypoint Mode

While in track waypoint mode, pressing **AUTO HEADING** changes autopilot to auto heading mode.

Acknowledging a Turn During a Waypoint Arrival

IMPORTANT: Unlike waypoint sequence mode, track waypoint mode will not automatically turn the boat upon arrival at a plotted waypoint.

1. When the boat enters a waypoint arrival zone as indicated by the chartplotter:
   - There will be one long and two short beeps.
   - The waypoint sequencing light will start blinking to inform the operator of the arrival.
   - VesselView will change its displayed information.

51886

2. If it is safe to change course to the next waypoint, the operator should press **WAYPOINT SEQUENCE** to acknowledge the waypoint. The autopilot will automatically turn the boat and maneuver to the new course.
3. If it is not safe to change course to the next waypoint, the operator should assume control of the vessel.
   IMPORTANT: If the waypoint is not acknowledged or the operator does not assume control of the boat, the autopilot will revert to auto heading and remain on its current course. The autopilot will continue on the course until the operator takes control. If adequate lookout is not maintained, the boat may strike another boat, strike an object in the water, or run aground.
4. If the waypoint is not acknowledged, the autopilot exits track waypoint mode and continues on its current heading in autopilot mode.

5. At the end of the route, input a new waypoint or waypoint route, or take control of the boat. Otherwise, the autopilot reverts to auto heading mode and continues to pilot the boat on its last heading.

51887

Waypoint Sequence

IMPORTANT: Unlike track waypoint mode, waypoint sequence mode will automatically turn the boat upon arrival at a plotted waypoint.

1. Turn on the chartplotter and select a waypoint route to be tracked.
2. Place at least one ERC lever into forward. Waypoint sequence mode will not engage if both levers are in neutral or reverse.
3. If the track waypoint light is not on, press **TRACK WAYPOINT**.
4. Press **WAYPOINT SEQUENCE** to engage the waypoint sequence mode.
5. VesselView will sound a beep, indicate that the system is in autopilot waypoint sequence, display the compass direction, and indicate that autopilot is locked bearing to waypoint (BTW).

51888

6. If you are in a waypoint arrival zone set by the chartplotter, waypoint sequence mode only informs the autopilot it is okay to proceed to the next waypoint. The waypoint sequence mode acts as a waypoint acknowledge function, and the autopilot sounds a beep when in the zone.

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 in the VesselView pop-up warning, and press the waypoint sequence button.

51889

8. Stay alert. The boat turns automatically in this mode. You 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 that they can be prepared.
9. To disable the autosequence mode, press the waypoint sequence button when the boat is not in a waypoint arrival zone.
10. Press the track waypoint button a second time to put the system in standby mode. All lights other than standby turn off.

Cruise Control

The VesselView system features integrated throttle cruise control, 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 control through the screen at any time.
- Cruise control resets when the key is turned off.
- If the cruise limit is changed while the levers are at WOT, the setting gradually changes to the new speed.
- Cruise control 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.

Section 3 - Troubleshooting

Table of Contents

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 Mariner 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 problems with the system when they occur and store a trouble code in the memory of the control module. This code can then be read by a service technician using a special diagnostic tool.

Engine Guardian System

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

If the 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 Marine dealer for assistance.

Troubleshooting Charts

Joystick

Symptom	Remedy
The joystick does not control the boat.	One or both ERC levers are not in neutral. Place the ERC levers into neutral position.
	Verify that at least two engines (one port and one starboard; refer to the NOTE, following) are running. Start the engine or engines.
Response to joystick input is erratic, or the joystick operates independent of input.	Ensure that 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 Engine Guardian fault codes that indicate reduced engine power. If any are found, have the system checked by your authorized Mercury Marine dealer.
The joystick operates erratically.	Check trim position. Trim the engines down.
The joystick operates too aggressively.	Activate dock mode. This will reduce the available power by 30%.

NOTE: *In order for the joystick to control the boat, at least two engines must be running. For triple-engine applications, these must be the two outer engines. For quad-engine applications, any combination of one port and one starboard engine will work (i.e., both outer engines, both inner engines, the port inner and starboard outer, or the port outer and the starboard inner).*

Electronic Remote Controls

Symptom	Remedy
The ERC lever is too hard or too easy to move out of the neutral detent.	Adjust the detent tension.
The ERC lever has too much or too little resistance through its range of motion.	Adjust the handle tension screw.
The ERC lever increases engine RPM, but the engines do not engage gears and the boat does not move.	Check the throttle-only button on the DTS trackpad. If the light is on, put the ERC levers in neutral and push the button to disengage.
	Turn off all engine key switches. Then turn them back on.
	Check VesselView for fault codes or popup warnings. Expand the fault code text to see if a course of action is required.
	Contact your authorized Mercury Marine dealer.

Symptom	Remedy
The ERC lever controls the engines, but they do not reach wide-open throttle.	If the engine reaches only 50% of available power, check the dock button on the DTS trackpad. If the light is on, put the handles in neutral and push the button to disengage.
	Check VesselView to see if cruise control is enabled. Disable cruise control.
	Check for damage to the propeller, and change the propeller if damage is found. Contact your authorized Mercury Marine dealer for service on the damaged propeller.
	Check VesselView for Guardian fault codes that indicate reduced engine power. If found, contact your authorized Mercury Marine dealer.
The ERC lever controls the engine but does not respond in a linear manner.	Check the troll button on the DTS trackpad. If the light is on, put the handles in neutral and push the troll button to disengage.
	Ensure that dock mode or cruise control are not engaged.
When one ERC lever is moved, all engines respond.	Check the single-lever button on the DTS trackpad. If the light is on, put the handles in neutral and push **1 LEVER** to disengage.
The ERC control, joystick, and steering wheel do not function.	Press **TRANSFER** on the DTS trackpad to restore helm control. (Multiple helm boats only.)
The boat moves forward, but will not move backwards quickly.	Trim the engines down.

Steering System

Symptom	Remedy
The steering wheel steers the boat, but operates without end stops.	The starboard key switch is tuned off. Turn the key on.
	Check the starboard power circuit breaker. Reset the circuit breaker, if it is tripped.
The steering wheel does not steer the boat.	Reduce speed and change to joystick for directional control. Check VesselView for faults.
	Check all fuses on the engine, helm, and battery. Verify that all circuit breakers are closed and reset if necessary.
	Check the harness connectors in steering actuators.
	Check the steering fluid level and fill if necessary.
	Contact your authorized Mercury Marine dealer for service.
Steering works, but the boat response is sluggish.	Check the trim. Adjust it if necessary.
	Ensure that all engines are operating.
	Cycle the engine key switches off and on.
	Check the steering fluid level and fill if necessary.
	Contact your authorized Mercury Marine dealer for service.
The steering wheel turned past the end stop.	Turn the key off and key on to restore steering wheel self-centering and to eliminate the fault code.

DTS Trackpad Features

NOTE: *Refer to* ***Electronic Remote Controls*** *for more situations that also involve the ERC and trackpad.*

Symptom	Remedy
The boat control is stuck in dock mode.	When trackpad features are engaged with the engines running, and one engine stalls or is turned off, the trackpad is locked into that feature. Start the engine and exit the feature.
The boat control is stuck in throttle-only mode.	
The boat control is stuck in single-lever mode.	

Autopilot

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

Skyhook

Symptom	Remedy
Skyhook does not work.	Verify that VesselView is on. VesselView must be turned on for Skyhook to function.
	Verify that the GPS unit is working. If it is locked up, cycle the keys.
	Verify that at least two engines (one port and one starboard; refer to the NOTE, following) are running. Start the engine or engines.

NOTE: *In order for Skyhook to operate, at least two engines must be running. For triple-engine applications, these must be the two outer engines. For quad-engine applications, any combination of one port and one starboard engine will work (i.e., both outer engines, both inner engines, the port inner and starboard outer, or the port outer and the starboard inner).*

Section 4 - Maintenance

Table of Contents

Outboard Care

To keep your outboards in the best operating condition, it is important that your outboards receive the periodic inspections and maintenance listed in the **Verado Owner's Manual** supplied with your engines. We urge you to keep your outboard engines maintained properly to ensure the safety of you and your passengers, and retain their dependability.

Anti-Collision Link Cables and Springs

IMPORTANT: The anti-collision link cables and springs ensure that the engines do not collide with each other. To prevent cowl or engine damage, it is critical that the proper length cables be installed in the correct orientation and with the correct springs. Damage resulting from incorrect or improperly installed cables and springs is not covered under warranty. We highly recommend that you refer this maintenance to your local, authorized Mercury dealer.

The anti-collision link cables and springs must be replaced:

- Every two years of saltwater use
- Every five years of freshwater use

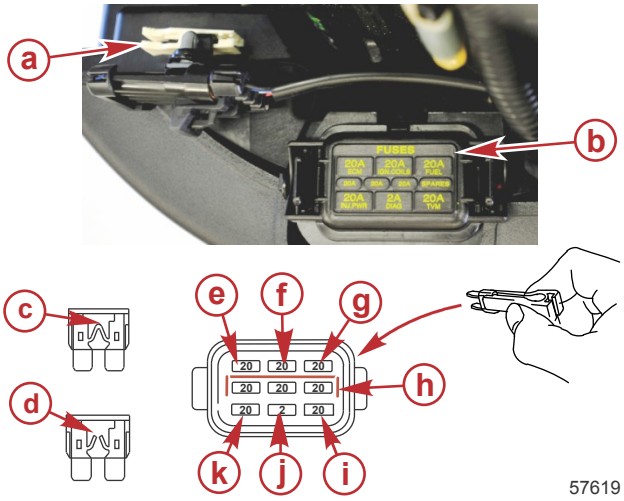
Fuses

IMPORTANT: The 20-amp fuse for the thrust vector module (TVM) power is in the fuse block for only joystick piloting engines. All other fuses are identical to the standard Verado and are as listed in your outboard's owner's manual.

The electrical wiring circuits on the outboard are protected from overload by fuses in the wiring. If a fuse is open, try to locate and correct the cause of the overload. If the cause is not found, the fuse may open again.

Remove the fuse puller from the holder.

Remove the cover from the fuse holder. Remove the suspected open fuse and look at the silver band inside the fuse. If the band is broken, replace the fuse. Replace the fuse with a new fuse with the same amp rating.



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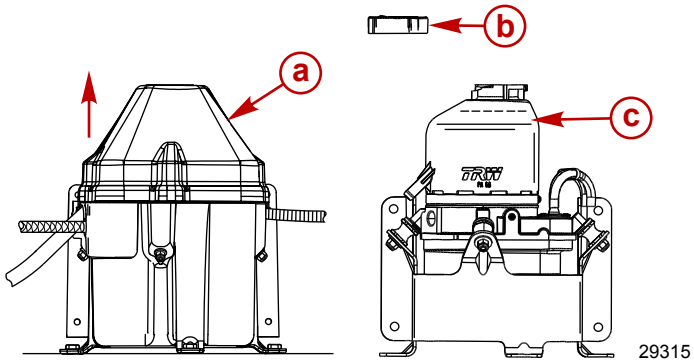
- **a -** Fuse puller
- **b -** Fuse holder
- **c -** Good fuse
- **d -** Open (blown) fuse
- **e -** Electronic control module and purge valve "ECM" – 20-amp fuse
- **f -** Ignition coils "IGN COILS" – 20-amp fuse
- **g -** Fuel delivery "FUEL" – 20-amp fuse
- **h -** Spare fuses (3)
- **i -** Thrust vector module (TVM) power – 20-amp fuse
- **j -** Diagnostics terminal – 2-amp fuse
- **k -** Injector power and boost valve "INJ PWR" – 20-amp fuse

Checking Power Steering Fluid

Remove power steering cover and fill cap to check fluid level. The fluid level should be slightly below the bottom of the fill hole. Use SAE 0W-30 synthetic power steering fluid, if needed.



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- **a -** Power steering cover
- **b -** Fill cap
- **c -** Fill/full level

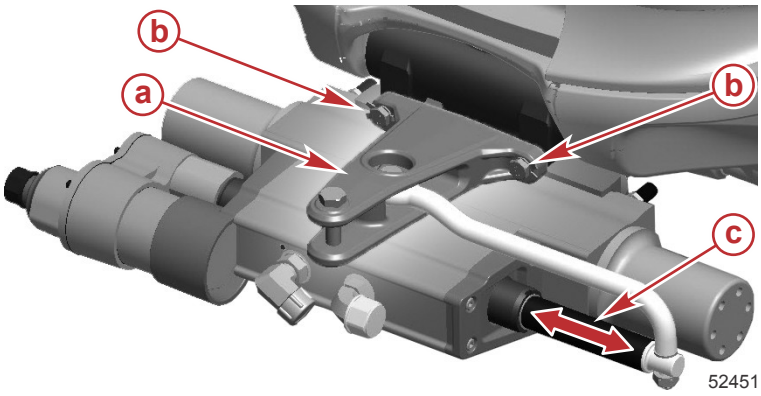
Tube Ref No.	Description	Where Used	Part No.
138	Synthetic Power Steering Fluid SAE 0W-30	Power steering system	92-858077K01

Joystick Piloting Steering Actuator

There is no need to apply grease to the Joystick Piloting steering actuator rod during any maintenance activity. Grease that is applied to the actuator rod may cause the internal seals to lift and pass water into the sealed portion of the actuator. This could potentially lead to internal corrosion that may damage the actuator.

The actuator rod does not require lubrication. Do not apply grease or lubricants to the actuator rod. If grease is present, extend the actuator fully and remove the grease. The actuator rod is nickel plated stainless steel and it will not corrode.

IMPORTANT: Do not apply grease or lubricants to the actuator rod.



a - Extension arm
b - Screw (2)
c - Actuator rod

Notes:

Section 5 - Customer Assistance Information

Table of Contents

5

Service Assistance

Local Repair Service

If you need service for your Mercury-outboard-powered boat, take it to your authorized dealer. Only authorized dealers specialize in Mercury 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 your power package.*

Service Away From Home

If you are away from your local dealer and the need arises for service, contact the nearest authorized dealer. 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 the recovery of stolen power packages.

Attention Required After Submersion

1. Before recovery, contact an authorized Mercury dealer.
2. After recovery, immediate service by an authorized Mercury 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 lives. They are also expected to operate in both fresh and saltwater environments. These conditions require numerous special parts.

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 about parts and accessories, the dealer requires the **engine model** and **serial numbers** to order the correct parts.

Resolving a Problem

Satisfaction with your Mercury product is 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 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 the 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
- Your daytime telephone number
- The model and serial numbers of your power package
- The name and address of your dealership
- The nature of the problem

Contact Information for Mercury Marine Customer Service

For assistance, call, fax, or write to the geographic office in your area. Please include your daytime telephone number with mail and fax correspondence.

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

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

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

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

Japan		
Telephone	+072 233 8888	Kisaka Co., Ltd. 4-130 Kannabecho, Sakai-ku Sakai-shi, Osaka 590-0984, Japan
Fax	+072 233 8833	

Asia, Singapore		
Telephone	+65 65466160	Brunswick Asia Pacific Group T/A Mercury Marine Singapore Pte Ltd 29 Loyang Drive Singapore, 508944
Fax	+65 65467789	

Ordering Literature

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

Model		Serial Number	
Horsepower		Year	

United States and Canada

For additional literature for your Mercury Marine power package, contact your nearest Mercury Marine dealer or contact:

Mercury Marine		
Telephone	**Fax**	**Mail**
(920) 929-5110 (USA only)	(920) 929-4894 (USA only)	Mercury Marine Attn: Publications Department P.O. Box 1939 Fond du Lac, WI 54936-1939

Outside the United States and Canada

Contact your nearest Mercury Marine authorized service center to order additional literature that is available for your particular power package.

Submit the following order form with payment to:	Mercury Marine Attn: Publications Department W6250 Pioneer Road P.O. Box 1939 Fond du Lac, WI 54936-1939
Ship To: (Copy this form and print or type–This is your shipping label)	
Name	
Address	
City, State, Province	
ZIP or postal code	
Country	

Quantity	Item	Stock Number	Price	Total
			.	.
			.	.
			.	.
			.	.
			.	.
			Total Due	.

Section 6 - Predelivery (PDI) and Customer Delivery (CDI) Checklists

Table of Contents

Predelivery Inspection (PDI)

IMPORTANT: This checklist is for packages equipped with joystick piloting. For engine packages not equipped with Joystick Piloting for Ouboard, use the outboard PDI checklist located on the MercNet website.
Perform these tasks before the Customer Delivery Inspection (CDI).

N/A	Check/ Adjust	Check Before Running:
☐	☐	Service bulletin updates or repairs completed
	☐	Drain plug installed and drain valves closed
	☐	Engine mounts tight
	☐	Engine alignment
	☐	Battery of proper rating, fully charged, secured, with protective covers in place
	☐	All electrical connections tight
	☐	All fuel connections tight
	☐	Correct propeller selected, installed, and tightened to specifications
	☐	Throttle, shift and steering system fasteners tightened to specifications
	☐	Steering operation throughout range
	☐	Crankcase oil level
	☐	Power trim oil level
	☐	Power steering fluid level
☐	☐	SmartCraft gauges calibrated
	☐	Warning system operation
	☐	Trim limit operation if applicable
	☐	Inspect the port hydraulic steering fluid reservoir level

N/A	Check/ Adjust	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 all trackpads (functional)

N/A	Check/ Adjust	On-the-Water Test:
	☐	Neutral start safety switch operation
	☐	Lanyard stop switch operation (all helms)
	☐	Operation of instruments
	☐	Fuel, oil, and water 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)
	☐	Power trim operation
☐	☐	Confirm vessel personality list
	☐	Ensure that the steering wheel returns to center position when turning on the starboard engine key switch.
☐	☐	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 that 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 that the vessel tracks a straight course at cruising speed. Perform drive alignment if required with CDS G3 Service Tool.
☐	☐	Enable the auto heading mode and drive for one minute at cruising speed ensuring that there is less than ± 5° deviation to port or starboard.
	☐	Check the steering response by steering the boat from steering 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 in gear at idle with all engines running. Turn the starboard engine off during the turn. Ensure that the boat steering remains responsive.

N/A	Check/ Adjust	After the On-the-Water Test:
	☐	Propeller nut tightened to specification
	☐	Fuel, oil, water and fluid leaks
	☐	Oil and fluid levels
	☐	Apply Quicksilver Corrosion Guard to the engine package
	☐	Operation, Maintenance & Warranty manual is in the boat

Customer Delivery Inspection (CDI)

IMPORTANT: This inspection must take place in the presence of the customer.
This checklist is for packages equipped with outboard joystick. For engine packages not equipped with outboard joystick, use the outboard PDI checklist located on the MercNet website. Perform these tasks after the Predelivery Inspection (PDI).

N/A	Completed	Item
	☐	Operation and maintenance manual—provide to and review with the 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 your dealer services.
☐	☐	Explain the optional Mercury Product Protection Plan to the customer (North America only)

N/A	Completed	Operation of equipment—explain and demonstrate:
	☐	E-stop switch / lanyard stop switch operation (all helms)
	☐	Cause and effect of steering torque or pull; instruct the customer 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)

N/A	Completed	Safety:
	☐	Enable throttle-only mode and demonstrate its ability to disable shifting of the electronic remote control and joystick while engines are running.

N/A	Completed	Joystick:
	☐	Demonstrate that the joystick requires all engines must 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.

N/A	Completed	Trackpad:
☐	☐	Demonstrate methods to enable and disable auto heading mode.
☐	☐	Demonstrate methods to enable and disable Skyhook.
☐	☐	Demonstrate methods to enable and disable autopilot waypoint sequencing.
		(Upgrade features can be disabled by moving the steering wheel, the ERCs, or by pushing the trackpad feature button again.)

N/A	Completed	Steering wheel:
	☐	Demonstrate that the keyswitch must be on for the steering wheel to autocenter and provide force feedback.
	☐	Demonstrate the steering wheel autocenter feature.
	☐	Show the customer the location of the 20 A circuit breaker.

N/A	Completed	Maintenance:
	☐	Explain hydraulic power steering fluid checks and the fluid required.

N/A	Completed	Registration:
	☐	Complete and submit the warranty registration. Provide the customer with a copy.