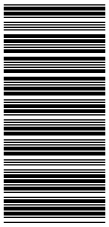


Welcome

You have selected one of the finest marine power packages 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. This manual is a supplement to the **Operation, Maintenance, and Warranty Manual** included with your engine package and provides information about the Zeus propulsion system. To ensure maximum performance and carefree use, we ask that you thoroughly read this manual, which contains specific instructions for using and maintaining your product. We suggest that this manual remain with the product for reference whenever you are on the water.

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

Mercury Diesel

Warranty Message

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

Mercury Diesel products are designed and manufactured to comply with our own high quality standards, applicable industry standards and regulations, as well as certain emissions regulations. At Mercury Marine every engine is operated and tested before it is boxed for shipment to make sure that the product is ready for use. In addition, certain Mercury Marine products are tested in a controlled and monitored environment, for up to 10 hours of engine run time, in order to verify and make a record of compliance with applicable standards and regulations. All Mercury Marine product, sold as new, receives the applicable limited warranty coverage, whether the engine participated in one of the test programs described above or not.

Read this Manual Thoroughly

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

Notice

Throughout this publication, and on your power package, dangers, warnings, cautions, and notices, accompanied by the International Hazard Symbol ⚠, may be used to alert the installer and user to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. Observe them carefully.

These safety alerts alone cannot eliminate the hazards that they signal. Installers must comply strictly with these special instructions and should exercise common sense during operation to prevent accidents.

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

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

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

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

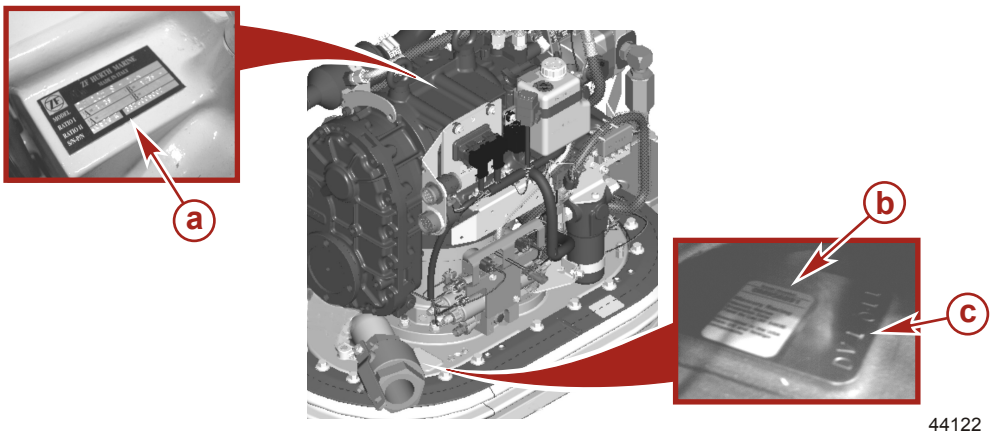
IMPORTANT: Identifies information essential to the successful completion of the task.

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

Identification Information

Drive serial number and model number—The serial numbers are the manufacturer's keys to numerous engineering details that apply to your Mercury Diesel product. When contacting Mercury Diesel about service, always specify model and serial numbers.

The serial number, model number, and other information needed for the identification record is located as shown.



Drive identification

- **a -** Transmission identification plate
- **b -** Drive identification decal
- **c -** Pod location stamping

44122

Control system identification (if applicable)—SmartCraft 3.0 versions of the Zeus electronic control system (refer to **Section 2—General Information**) have an electronics serial number (ESN) data tag located on the inside of the vessel interface panel (VIP) door. The number is needed for the identification record.

51257

Engine serial number and model number—Refer to the engine operation and maintenance manual available from the engine manufacturer for the location of the engine data tag that contains the engine serial number and model number needed in the identification record.

Identification Record

Please record the following information:			
Drive Location	**Zeus Drive Serial Number**	**Zeus Drive Model Number**	**Transmission Serial Number**
Starboard			
Center			
Port			
Starboard Center			
Port Center			
Engine Serial Number			
Starboard		Starboard Center	
Center		Port Center	
Port			
Engine Model and Horsepower	**Propeller Information**	**Propeller Part Number**	**Pitch**
/	Front		
	Rear		
Boat Hull Identification Number (HIN)			**Purchase Date**
			/
Boat Manufacturer		**Boat Model**	**Boat Length**
Exhaust Gas Emissions Certificate Number (Europe Only)		**Electronic Control Serial Number**	
/			

Trademark and Copyright Information

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

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

⚠ WARNING

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

⚠ WARNING

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

TABLE OF CONTENTS

Section 1 - Warranty

Section 2 - Getting to Know Your Power Package

Section 3 - On the Water

Section 4 - Specifications

Section 5 - Maintenance

Section 6 - Storage

Section 7 - Troubleshooting

Section 8 - Customer Assistance Information

Section 9 - Predelivery Information

Section 1 - Warranty

1

Table of Contents

Warranty Information

Warranty Registration United States and Canada

1. To be eligible for warranty coverage, the product must be registered with Mercury Marine. At the time of sale, the dealer should complete the warranty registration and immediately submit it to Mercury Marine via MercNET, E-mail, or mail. Upon receipt of this warranty registration, Mercury Marine will record the registration.
2. Warranty coverage is not effective until your product is registered with Mercury Marine.
3. You may change your address at any time, including at time of warranty claim, by calling Mercury Marine or sending a letter or fax with your name, old address, new address, and engine serial number to Mercury Marine's Warranty Registration Department. Your dealer can also process this change of information.
   Mercury Marine
   Attn: Warranty Registration Department
   W6250 W. Pioneer Road
   P.O. Box 1939
   Fond du Lac, WI 54936-1939
   920-929-5054
   Fax +1 920 907 6663

   NOTE: *Registration lists must be maintained by Mercury Marine and any dealer on marine products sold in the United States, should a safety recall notification under the Federal Safety Act be required.*

Warranty Registration—Outside the United States and Canada

1. It is important that your selling dealer fills out the warranty registration card completely and mails it to the distributor or Marine Power Service Center responsible for administering the warranty registration and claim program for your area.
2. The warranty registration card identifies your name and address, product model and serial numbers, date of sale, type of use and the selling distributor's and dealer's code number, name and address. The distributor or dealer also certifies that you are the original purchaser and user of the product.
3. A copy of the warranty registration card, designated as the purchaser's copy, must be given to you immediately after the card has been completely filled out by the selling distributor or dealer. This card represents your factory registration identification, and should be retained by you for future use when required. Should you ever require warranty service on this product, your dealer may ask you for the warranty registration card to verify date of purchase and to use the information on the card to prepare the warranty claim forms.
4. In some countries, the Marine Power Service Center will issue you a permanent (plastic) warranty registration card within 30 days after receiving the factory copy of the warranty registration card from your distributor or dealer. If you receive a plastic warranty registration card, you may discard the purchaser's copy that you received from the distributor or dealer when you purchased the product. Ask your distributor or dealer if this plastic card program applies to you.
5. For further information concerning the warranty registration card and its relationship to Warranty Claim processing, refer to the International Warranty. See Table of Contents.

IMPORTANT: Registration lists must be maintained by the factory and dealer in some countries by law. It is our desire to have ALL products registered at the factory should it ever be necessary to contact you. Make sure your Mercury Marine distributor or Mercury Marine authorized dealer fills out the warranty registration card immediately and sends the factory copy to the Marine Power International Service Center for your area.

Warranty Policy—Diesel Models

HIGH-OUTPUT RECREATIONAL USE WORLDWIDE LIMITED WARRANTY

What is Covered

Mercury Marine warrants each new Zeus drive system (Product) to be free of defects in material and workmanship during the period described following.

Duration of Coverage

The warranty period begins on the date the product is first sold to a recreational-use retail purchaser or the date on which the product is first put into service, whichever occurs first. This Limited Warranty provides coverage for 24 months or 1000 hours of use, whichever occurs first. Commercial use of the product voids the warranty. Commercial use is defined as any work or employment related use of the product, or any use of the product which generates income during any part of the warranty period, even if the product is only occasionally used for such purposes. The repair or replacement of parts, or the performance of service under this warranty does not extend the term of this warranty beyond its original expiration date. Unexpired warranty coverage can be transferred from one recreational use customer to a subsequent recreational use customer upon proper reregistration of the product.

Two Year Limited Warranty—Limited Warranty Coverage

This limited warranty provides coverage for 24 months or 1000 hours of use, whichever occurs first for the base drive warranty.

Coverage Category	Months	Hours	Parts and Labor	Travel
Base drive	24	1000	Yes	Yes
Extended major components	48	2000	Yes	Yes

Extended Major Components Limited Warranty

The Extended Major Components Limited Warranty takes effect when the Base Drive Limited Warranty expires. The Base Drive Limited Warranty expires after 24 months or 1000 hours in service, whichever occurs first. The Extended Major Components Limited Warranty covers warrantable failures of the following drive parts or castings for 48 months or 2000 hours in service, whichever occurs first:

Extended Major Components Limited Warranty Coverage
Marine gear housing casting
Marine gear drop box housing casting
Steering actuator housing casting
Drive midsection casting
Lower gear housing casting (underwater impact damage excluded)
Trim tab casting (underwater impact damage excluded)
Bearing carrier casting (underwater impact damage excluded)
Driveshaft (U-joints excluded)
Intermediate shaft (underwater impact damage excluded)
Clamp rings
Skeg (underwater impact damage excluded)

High-Output Rating

A **High-Output Rating** applies to variable load applications and requires full power to be limited to one (1) hour out of every eight (8) hours of operation. Reduced power operation (the 7 hours out of 8 hours in which the engine is not operated at full power) must be at or below cruise speed. Cruise speed is dependant on the engine's maximum engine rated speed (RPM):

Full Power Engine Rated Speed (RPM) (Full Power is defined as an RPM that exceeds cruise speed)	Cruise Speed Reduction from Engine Rated Speed (RPM)
2000–2800 RPM	200 RPM
2800–3500 RPM	300 RPM
3500–4500 RPM	400 RPM

Conditions That Must Be Met to Obtain Warranty Coverage

Warranty coverage is available only to retail customers that purchase from a dealer authorized by Mercury Marine to distribute the product in the country in which the sale occurred, and then only after the Mercury Marine specified predelivery inspection process is completed and documented. Warranty coverage becomes available upon proper registration of the product by the authorized dealer. Inaccurate warranty registration information regarding recreational use, or subsequent change of use from recreational to commercial (unless properly reregistered) may void the warranty at the sole discretion of Mercury Marine. Routine maintenance outlined in the Operation, Maintenance, & Warranty Manual must be timely performed in order to obtain warranty coverage. Mercury Marine reserves the right to make any warranty coverage contingent upon proof of proper maintenance.

NOTE: *The product application must be reviewed and approved by Mercury Marine.*

What Mercury Marine Will Do

Mercury Marine’s sole and exclusive obligation under this warranty is limited to, at our option, repairing a defective part, replacing such part or parts with new or Mercury Marine certified remanufactured parts, or refunding the purchase price of the Mercury Marine product. Mercury Marine reserves the right to improve or modify products from time to time without assuming an obligation to modify products previously manufactured.

How to Obtain Warranty Coverage

Warranty claims must be made through a Mercury Marine authorized repair facility. The customer must provide Mercury Marine with a reasonable opportunity to repair and reasonable access to the product for warranty service. The purchaser shall not, unless requested by Mercury Marine, ship the product or parts of the product directly to Mercury Marine.

Termination of Coverage

Warranty coverage may be terminated for used product obtained in any of the following ways:

- Repossession from a retail customer
- Purchase at auction
- Purchase from a salvage yard
- Purchase from an insurance company that obtained the product as a result of an insurance claim
- Inaccurate warranty registration information

What Is Not Covered

This limited warranty does not cover the following:

- Routine maintenance items
- Adjustments
- Normal wear and tear
- Damage caused by abuse
- Abnormal use
- Use of a propeller or gear ratio that does not allow the engine to run in its recommended RPM range (see the Operation, Maintenance & Warranty manual)
- Operation of the product in a manner inconsistent with the recommended operation and duty cycle section of the Operation, Maintenance & Warranty manual
- Neglect
- Accident
- Submersion
- Improper installation (proper installation specifications and techniques are set forth in the installation instructions for the product)
- Improper service
- Use of an accessory or part that was not manufactured or sold by Mercury Marine and that damages the Mercury product
- Operation with oils or lubricants that are not suitable for use with the product (see the Operation, Maintenance & Warranty manual)
- Alteration or removal of parts
- Damage to the product from insufficient cooling water caused by blockage of the cooling system by a foreign body

Use of the product for racing or other competitive activity, even by a previous owner of the product, voids the warranty. Expenses related to haul-out, launch, towing, storage, telephone, rental, inconvenience, slip fees, insurance coverage, loan payments, loss of time, loss of income, or any other type of incidental or consequential damages are not covered by this warranty. Also, expenses associated with the removal or replacement of boat partitions or other material in order to gain access to the product are not covered by this warranty. No individual or entity, including Mercury Marine authorized dealers, has been given authority by Mercury Marine to make any affirmation, representation, or warranty regarding the product, other than those contained in this limited warranty. If such affirmation, representation, or warranty is made, it shall not be enforceable against Mercury Marine.

DISCLAIMERS AND LIMITATIONS
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME STATES/COUNTRIES DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE. AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH VARY FROM STATE TO STATE AND COUNTRY TO COUNTRY.

INTERMITTENT COMMERCIAL USE WORLDWIDE LIMITED WARRANTY

Products Included in this Coverage

Mercury Marine warrants each new Zeus drive system (Product) to be free of defects in material and workmanship during the period as described in the following.

Duration of Coverage

The warranty period begins on the date the product is first sold to an intermittent commercial-use retail purchaser or the date on which the product is first put into service, whichever occurs first. This Limited Warranty provides coverage for 24 months or 3000 hours of use, whichever occurs first. The repair or replacement of parts, or the performance of service under this warranty, does not extend the life of the warranty beyond its original expiration date. Unexpired warranty coverage cannot be transferred.

Intermittent Commercial Rating

Intermittent Commercial applies to variable load applications where full power is limited to two (2) hours out of every eight (8) hours of operation. Reduced power operation (the 6 hours out of 8 hours in which the engine is not operated at full power) must be at or below cruise speed. Cruise speed is dependant on the engine's maximum engine rated speed (RPM):

Full Power Engine Rated Speed (RPM) (Full Power is defined as an RPM that exceeds cruise speed)	Cruise Speed Reduction from Engine Rated Speed (RPM)
2000–2800 RPM	200 RPM
2800–3500 RPM	300 RPM
3500–4500 RPM	400 RPM

Commercial use is defined as any work or employment related use of this product, or any use of the product which generates income, for any part of the warranty period, even if the product is only occasionally used for such purposes.

Operation of the product in excess of the intermittent commercial-use specifications will void the warranty.

Conditions That Must Be Met to Obtain Warranty Coverage

Warranty coverage is available only to retail customers that purchase from a dealer authorized by Mercury Marine to distribute the product in the country in which the sale occurred, and then only after the Mercury Marine specified predelivery inspection process is completed and documented. Warranty coverage becomes available upon proper registration of the product by the authorized dealer. Routine maintenance outlined in the Operation, Maintenance, & Warranty Manual must be timely performed in order to obtain warranty coverage. Mercury Marine reserves the right to make any warranty coverage contingent upon proof of proper maintenance.

NOTE: *The product application must be reviewed and approved by Mercury Marine.*

What Mercury Marine Will Do

Mercury Marine’s sole and exclusive obligation under this warranty is limited to, at our option, repairing a defective part, replacing such part or parts with new or Mercury Marine certified remanufactured parts, or refunding the purchase price of the Mercury Marine product. Mercury Marine reserves the right to improve or modify products from time to time without assuming an obligation to modify products previously manufactured.

How to Obtain Warranty Coverage

Warranty claims must be made through a Mercury Marine authorized repair facility. The customer must provide Mercury Marine with a reasonable opportunity to repair and reasonable access to the product for warranty service. The purchaser shall not, unless requested by Mercury Marine, ship the product or parts of the product directly to Mercury Marine.

Termination of Coverage

Warranty coverage may be terminated for used product obtained in any of the following ways:

- Repossession from a retail customer
- Purchase at auction
- Purchase from a salvage yard
- Purchase from an insurance company that obtained the product as a result of an insurance claim
- Inaccurate warranty registration information

What Is Not Covered

This limited warranty does not cover the following:

- Routine maintenance items
- Adjustments
- Normal wear and tear
- Damage caused by abuse
- Abnormal use
- Use of a propeller or gear ratio that does not allow the engine to run in its recommended RPM range (see the Operation, Maintenance & Warranty manual)
- Operation of the product in a manner inconsistent with the recommended operation and duty cycle section of the Operation, Maintenance & Warranty manual
- Neglect
- Accident
- Submersion
- Improper installation (proper installation specifications and techniques are set forth in the installation instructions for the product)
- Improper service
- Use of an accessory or part that was not manufactured or sold by Mercury Marine and that damages the Mercury product
- Operation with oils or lubricants that are not suitable for use with the product (see the Operation, Maintenance & Warranty manual)
- Alteration or removal of parts
- Damage to the product from insufficient cooling water caused by blockage of the cooling system by a foreign body

Use of the product for racing or other competitive activity, even by a previous owner of the product, voids the warranty. Expenses related to haul-out, launch, towing, storage, telephone, rental, inconvenience, slip fees, insurance coverage, loan payments, loss of time, loss of income, or any other type of incidental or consequential damages are not covered by this warranty. Also, expenses associated with the removal or replacement of boat partitions or other material in order to gain access to the product are not covered by this warranty. No individual or entity, including Mercury Marine authorized dealers, has been given authority by Mercury Marine to make any affirmation, representation, or warranty regarding the product, other than those contained in this limited warranty. If such affirmation, representation, or warranty is made, it shall not be enforceable against Mercury Marine.

DISCLAIMERS AND LIMITATIONS
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME STATES/COUNTRIES DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE. AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH VARY FROM STATE TO STATE AND COUNTRY TO COUNTRY.

Zeus Drive Limited Warranty Against Corrosion

What Is Covered

Mercury Marine warrants that each new (noncommercial use) Zeus drive system (Product) will not be rendered inoperative as a direct result of corrosion for the period of time described in the following:

Duration of Coverage

This limited corrosion warranty provides coverage for 36 months or 1500 hours of use from either the date the product is first sold, or the date on which the product is first put into service, whichever occurs first. The repair and replacement of parts, or the performance of service under this warranty does not extend the life of this warranty beyond its original expiration date. Unexpired warranty coverage can be transferred to a subsequent purchaser upon proper reregistration of the product. Warranty coverage may be terminated for used product repossessed from a retail customer, purchased at an auction, from a salvage yard, or from an insurance company that obtained the product as a result of an insurance claim.

Conditions That Must Be Met to Obtain Warranty Coverage

Warranty coverage is available only to retail customers that purchase from a dealer authorized by Mercury Marine to distribute the product in the country in which the sale occurred, and then only after the Mercury Marine specified predelivery inspection process is completed and documented. Warranty coverage becomes available upon proper registration of the product by the authorized dealer. Corrosion prevention devices specified in the Operation, Maintenance & Warranty manual must be in use on the boat, and routine maintenance outlined in the Operation, Maintenance & Warranty manual must be timely performed (including without limitation the replacement of sacrificial anodes, use of specified lubricants, and touch-up of nicks and scratches) in order to maintain warranty coverage. Mercury Marine reserves the right to make warranty coverage contingent upon proof of proper maintenance.

What Mercury Will Do

Mercury's sole and exclusive obligation under this warranty is limited to, at our option, repairing a corroded part, replacing such part or parts with new or Mercury Marine certified remanufactured parts, or refunding the purchase price of the Mercury product. Mercury reserves the right to improve or modify products from time to time without assuming an obligation to modify products previously manufactured.

How to Obtain Warranty Coverage

The customer must provide Mercury with a reasonable opportunity to repair, and reasonable access to the product for warranty service. Warranty claims shall be made by delivering the product for inspection to a Mercury dealer authorized to service the product. If purchaser cannot deliver the product to such a dealer, written notice must be given to Mercury. We will then arrange for the inspection and any covered repair. Purchaser in that case shall pay for all related transportation charges and/or travel time. If the service provided is not covered by this warranty, purchaser shall pay for all related labor and material, and any other expenses associated with that service. Purchaser shall not, unless requested by Mercury, ship the product or parts of the product directly to Mercury. Proof of registered ownership must be presented to the dealer at the time warranty service is requested in order to obtain coverage.

What Is Not Covered

This limited warranty does not cover electrical system corrosion; corrosion resulting from damage, corrosion which causes purely cosmetic damage, abuse or improper service; corrosion to accessories, instruments, steering systems; damage due to marine growth; product sold with less than a one year limited product warranty; replacement parts (parts purchased by the Customer); products used in a commercial application; corrosion damage as a result of improper paint application (see Operation, Maintenance and Warranty manual for acceptable paint applications). Commercial use is defined as any work or employment related use of the product, or any use of the product which generates income, for any part of the warranty period, even if the product is only occasionally used for such purposes.

DISCLAIMERS AND LIMITATIONS
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME STATES/COUNTRIES DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE. AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH VARY FROM STATE TO STATE AND COUNTRY TO COUNTRY.

3-Year Limited Warranty Against Corrosion–Diesel Models (Recreational Use Only)

What Is Covered

Mercury Marine warrants that each new recreational use engine/drive package (Product) will not be rendered inoperative as a direct result of corrosion for the period of time described in the following:

Duration of Coverage

This limited corrosion warranty provides coverage for three (3) years from either the date the product is first sold, or the date on which the product is first put into service, whichever occurs first. The repair and replacement of parts, or the performance of service under this warranty does not extend the life of this warranty beyond its original expiration date. Unexpired warranty coverage can be transferred to subsequent (noncommercial use) purchaser upon proper reregistration of the product. Warranty coverage may be terminated for used product repossessed from a retail customer, purchased at an auction, from a salvage yard, or from an insurance company that obtained the product as a result of an insurance claim.

Conditions That Must Be Met to Obtain Warranty Coverage

Warranty coverage is available only to retail customers that purchase from a dealer authorized by Mercury Marine to distribute the product in the country in which the sale occurred, and then only after the Mercury Marine specified predelivery inspection process is completed and documented. Warranty coverage becomes available upon proper registration of the product by the authorized dealer. Corrosion prevention devices specified in the Operation, Maintenance & Warranty manual must be in use on the boat, and routine maintenance outlined in the Operation, Maintenance & Warranty manual must be timely performed (including without limitation the replacement of sacrificial anodes, use of specified lubricants, and touch-up of nicks and scratches) in order to maintain warranty coverage. Mercury Marine reserves the right to make warranty coverage contingent upon proof of proper maintenance.

What Mercury Will Do

Mercury's sole and exclusive obligation under this warranty is limited to, at our option, repairing a corroded part, replacing such part or parts with new or Mercury Marine certified remanufactured parts, or refunding the purchase price of the Mercury product. Mercury reserves the right to improve or modify products from time to time without assuming an obligation to modify products previously manufactured.

How to Obtain Warranty Coverage

The customer must provide Mercury with a reasonable opportunity to repair, and reasonable access to the product for warranty service. Warranty claims shall be made by delivering the product for inspection to a Mercury dealer authorized to service the product. If purchaser cannot deliver the product to such a dealer, written notice must be given to Mercury. We will then arrange for the inspection and any covered repair. Purchaser in that case shall pay for all related transportation charges and/or travel time. If the service provided is not covered by this warranty, purchaser shall pay for all related labor and material, and any other expenses associated with that service. Purchaser shall not, unless requested by Mercury, ship the product or parts of the product directly to Mercury. Proof of registered ownership must be presented to the dealer at the time warranty service is requested in order to obtain coverage.

What Is Not Covered

This limited warranty does not cover electrical system corrosion; corrosion resulting from damage, corrosion which causes purely cosmetic damage, abuse or improper service; corrosion to accessories, instruments, steering systems; damage due to marine growth; product sold with less than a one year limited product warranty; replacement parts (parts purchased by the Customer); products used in a commercial application. Commercial use is defined as any work or employment related use of the product, or any use of the product which generates income, for any part of warranty period, even if the product is only occasionally used for such purposes.

DISCLAIMERS AND LIMITATIONS
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME STATES/COUNTRIES DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE. AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH VARY FROM STATE TO STATE AND COUNTRY TO COUNTRY.

Transfer of Warranty

The limited warranty is transferable to a subsequent purchaser, but only for the remainder of the unused portion of the limited warranty. This will not apply to products used for commercial applications.

To transfer the warranty to the subsequent owner, send or fax a copy of the bill of sale or purchase agreement, new owner's name, address and engine serial number to Mercury Marine's Warranty Registration Department. In the United States and Canada, mail to:

Mercury Marine
Attn: Warranty Registration Department
W6250 W. Pioneer Road
P.O. Box 1939
Fond du Lac, WI 54936-1939
920-929-5054
Fax +1 920 907 6663

Upon processing the transfer of warranty, Mercury Marine will send registration verification to the new owner of the product by mail.

There is no charge for this service.

For products purchased outside the United States and Canada, contact the distributor in your country, or the Marine Power Service Center closest to you.

Notes:

Section 2 - Getting to Know Your Power Package

Table of Contents

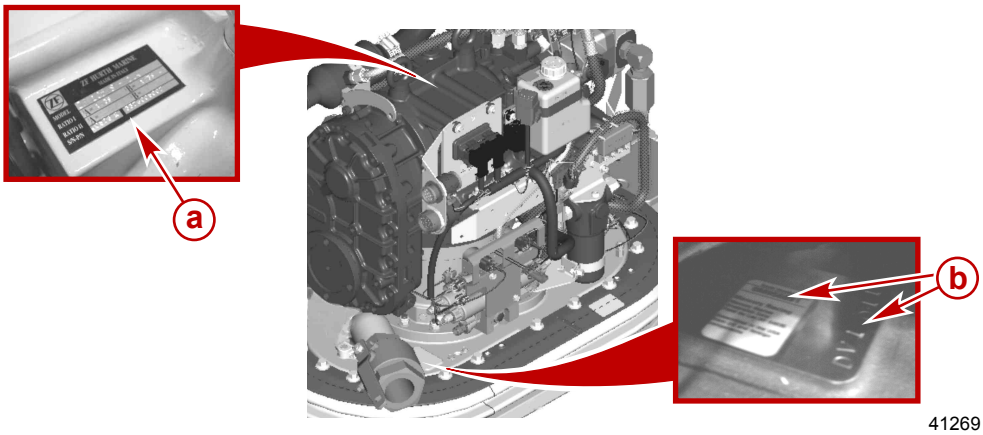
General Information

Models Covered

Models Covered	Serial Number
Zeus 3000 Series Pod Drive	0M963371 and above

Drive Serial Number and Decal Placement

Serial numbers are the manufacturer's key to numerous engineering details that apply to your drive.



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Drive serial number locations

a - Transmission serial number plate

b - Drive serial number decal and stamping

Refer to the engine owner's manual supplied with the engine for the location of the engine data tag that contains the engine serial number and model number.

Features and Controls

Instrumentation

VesselView

Your power package may be connected to a SmartCraft VesselView display. The interactive VesselView display continuously reports real-time information about speed, performance, engine fault codes, fuel status, water temperature and depth, and other operating data. When VesselView detects a problem with any connected system, it displays an alarm message to the boat operator.

27198

VesselView

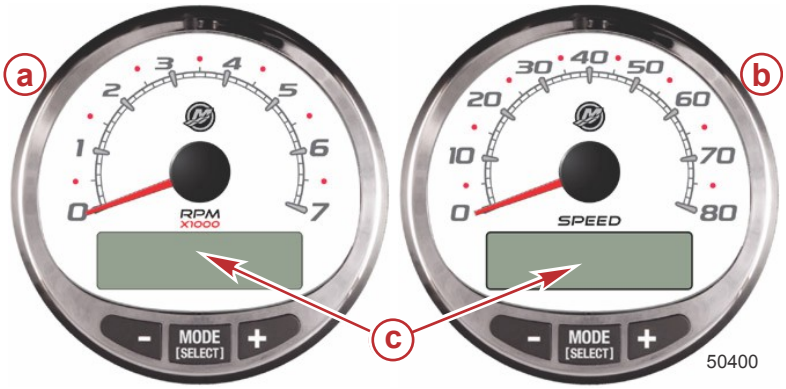
VesselView may also be connected to other vessel systems such as GPS, generators, and cabin environmental controls. This vessel integration allows the operator to monitor and control a wide range of vessel systems from a single display.

Refer to your VesselView operations manual for detailed instructions on how to operate this display.

SmartCraft Speedometer and Tachometer Digital Gauges

The SmartCraft instrument package, if equipped, augments the information provided by VesselView. The instrument package may display:

- Engine RPM
- Boat speed
- Coolant temperature
- Oil pressure
- Battery voltage
- Fuel consumption
- Engine operating hours



SmartCraft tachometer and speedometer

a - Tachometer
b - Speedometer
c - LCD display

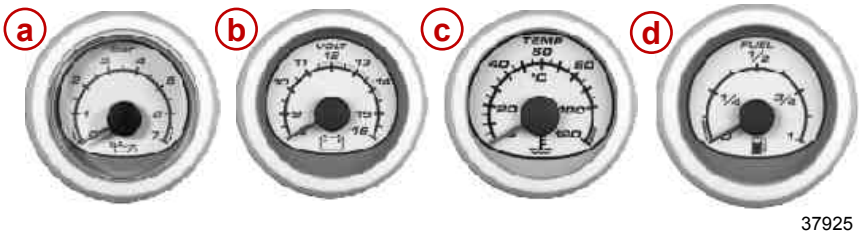
The SmartCraft instrument package also aids in identifying the fault codes associated with the engine audio warning system. The SmartCraft instrument package displays critical engine alarm data and other potential problems on its LCD display.

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. Because of the large variety of instrumentation and manufacturers, 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

Switches

Four-Position Key Switch

38160

- **"OFF"** - In the "OFF" position, all electrical circuits are off. The engine will not operate with the key switch in the "OFF" position.
- **"ACC"** - In the "ACC" position, any accessories connected to the electrical circuits can be operated. The engine will not operate with the key switch in the "ACC" position.
- **"ON"** - In the "ON" position, all electrical circuits and instrumentation receive power. The engine can be started with an optional start-stop switch.
- **"START"** - Turn the key to the start position and release to start the engine.

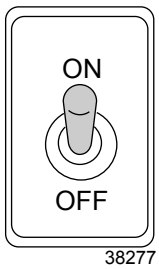
NOTE: *The key can only be removed with the key switch in the "OFF" position.*

Dual-Engine Start-Stop Switch

28082

A start-stop switch is optional equipment. The start-stop switch works in conjunction with the key switch. There is one start-stop switch for each engine. Each button on a multi-engine start-stop switch functions independently. The key switch must be in the run position to start a stopped engine with the start-stop switch. Pressing a start-stop switch button when an engine is running will shut down the corresponding engine.

Bilge Blower Toggle Switch



38277

Operates the bilge blower, if equipped.

Emergency Stop Switch

An emergency stop (E-stop) switch is used to turn off the engines in an emergency situation, such as a person overboard or a tangled propeller. When activated, an E-stop switch interrupts the power supply to the engine and transmission. If the boat is equipped with an E-stop switch, the E-stop switch turns off all of the engines.

Typical E-stop switch

Activation of an E-stop switch stops the engine, or engines, immediately, but the boat can continue to coast for some distance depending upon the velocity and degree of any turn at shutdown. While the boat is coasting, it can cause injury to anyone in the boat's path as seriously as the boat would when under power.

We recommend instructing other occupants on proper starting and operating procedures should they need to operate the engine in an emergency.

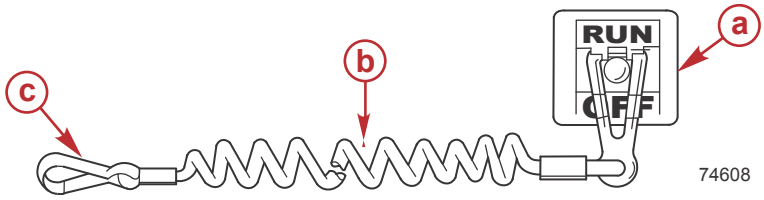
Accidental or unintended activation of the switch during normal operation is also possible, which can cause any or all of the following potentially hazardous situations:

- Occupants can be thrown forward due to unexpected loss of forward motion, and passengers in the front of the boat could be ejected over the bow and possibly struck by the propulsion or steering components.
- The operator can lose power and directional control in heavy seas, strong current, or high winds.
- The operator can lose control of the vessel when docking.

Restarting an engine using the key switch or start button after an E-stop shutdown without first turning the key switch to the off position for at least 30 seconds will restart the engine but cause fault codes to be set. Unless you are in a potentially hazardous situation, turn the key switch off and wait at least 30 seconds before restarting the engine or engines. If after restarting, some fault codes are still being displayed, contact your authorized Mercury Diesel repair facility.

Lanyard Stop Switch

The purpose of a lanyard stop switch is to turn off the engine when the operator moves outside the operator's position (as in accidental ejection from the operator's position).



a - Stop switch
b - Lanyard
c - Clips to the operator

Accidental ejections, such as falling overboard, are more likely to occur in:

- low-sided sport boats
- bass boats
- high-performance boats

Accidental ejections can also occur from:

- poor operating practices
- sitting on the seat or gunwale at planing speeds
- standing at planing speeds
- operating at planing speeds in shallow or obstacle infested waters

- releasing your grip on the steering wheel that is pulling in one direction
- consuming alcohol or drugs
- high-speed boating maneuvers

The lanyard is a cord usually between 122 and 152 cm (4 and 5 ft) in length when stretched out, with an element on one end made to be inserted into the switch and a snap on the other end for attaching to the operator. The lanyard is coiled to make its at-rest condition as short as possible to minimize the likelihood of lanyard entanglement with nearby objects. Its stretched-out length is made to minimize the likelihood of accidental activation should the operator choose to move around in an area close to the normal operator's position. If it is desired to have a shorter lanyard, wrap the lanyard around the operator's wrist or leg, or tie a knot in the lanyard.

Activation of the lanyard stop switch will stop the engine immediately, but the boat will continue to coast for some distance depending upon the velocity and degree of any turn at shut down. However, the boat will not complete a full circle. While the boat is coasting, it can cause injury to anyone in the boat's path as seriously as the boat would when under power.

We strongly recommend that other occupants be instructed on proper starting and operating procedures should they be required to operate the engine in an emergency (if the operator is accidentally ejected).

⚠ WARNING

If the operator falls out of the boat, stop the engine immediately to reduce the possibility of serious injury or death from being struck by the boat. Always properly connect the operator to the stop switch using a lanyard.

Accidental or unintended activation of the switch during normal operation is also a possibility. This could cause any, or all, of the following potentially hazardous situations:

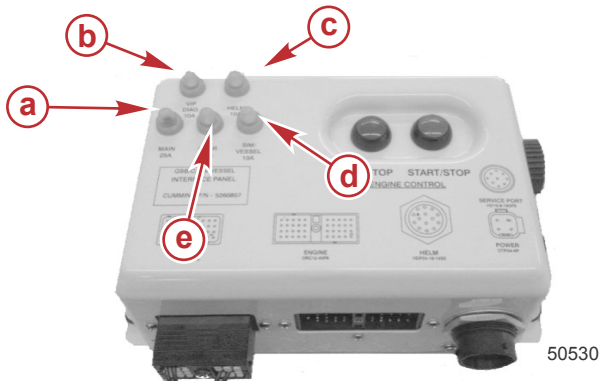
- Occupants could be thrown forward due to unexpected loss of forward motion, a particular concern for passengers in the front of the boat who could be ejected over the bow and possibly struck by the propulsion or steering components.
- Loss of power and directional control in heavy seas, strong current, or high winds.
- Loss of control when docking.

⚠ WARNING

Avoid serious injury or death from deceleration forces resulting from accidental or unintended stop switch activation. The boat operator should never leave the operator's station without first disconnecting the stop switch lanyard from the operator.

Vessel Interface Panel (VIP) Overload

A vessel interface panel (VIP) is typically mounted in the engine compartment. The VIP contains circuit breakers that help protect the system wiring.



a - Main circuit breaker (25 amp)
b - VIP diagnostic circuit breaker (10 amp)
c - Helm circuit breaker (10 amp)
d - SIM/vessel circuit breaker (10 amp)
e - Gear circuit breaker (15 amp)

Starting and Stopping the Engines

Your Zeus power package is equipped with a SmartStart system, that includes a start/stop button for emergency use that is remotely mounted in the vessel interface panel (VIP). The VIP is usually located in the engine room.

In normal circumstances, start and stop the engine from the helm using the start/stop button of the SmartStart system.

NOTICE

The seawater pumps on vessels equipped with Zeus pod drives can be damaged by excessive exhaust aeration due to inadequate water flow. To ensure adequate water flow across the seawater inlets, make sure that the vessel is underway before exceeding 1500 RPM.

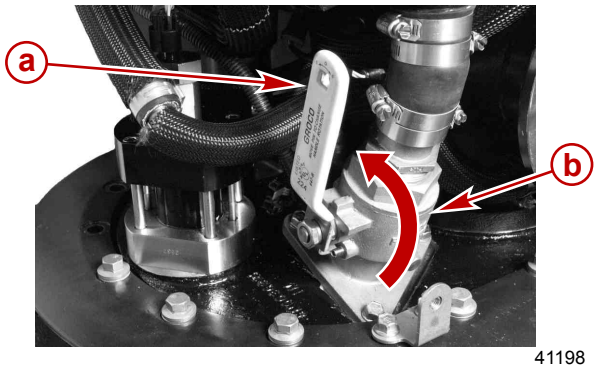
Starting an Engine Using the VIP SmartStart Switch

You may desire to start an engine from the engine room or under certain circumstances the engine control systems may not be able to automatically start an engine. The engines can be started using the "SMARTSTART" (start/stop) switch on the VIP for each engine.

1. Perform the checks and steps listed in the engine's operation and maintenance manual available for this package.

   NOTE: *Some vessels are not equipped with a seawater return seacock.*

2. Open the seawater return seacock, if equipped. Rotate the handle in the direction indicated by the arrow.



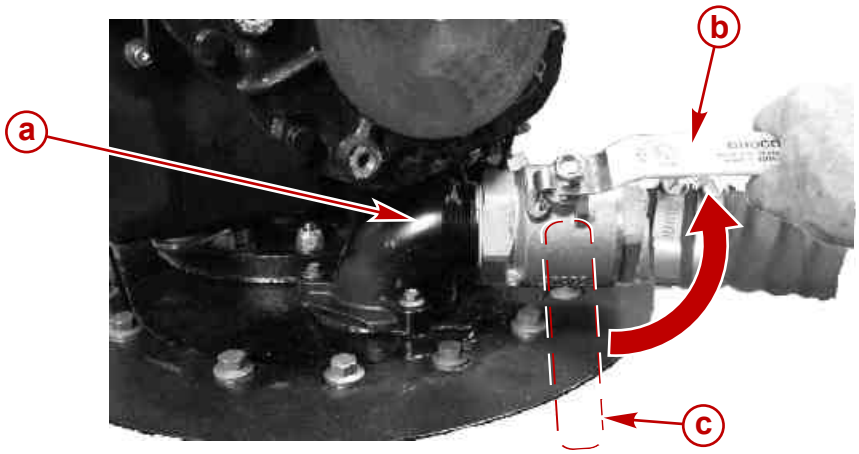
41198

Drive cover removed for clarity

a - Handle in open position

b - Seawater return (overboard) seacock, if equipped

3. Open the seacock for the seawater inlet. Rotate the handle in the direction indicated by the arrow.



41197

Typical inlet seacock—port orientation (starboard similar)

a - Seacock for seawater inlet

b - Handle in open position

c - Former position (closed)

4. Open the seacock (if equipped) for any accessory equipment.

   NOTE: *When the key switch is turned to the on position the neutral LED lights, on the ERC trackpad, flash on and off if the ERC handles are not in the neutral position. Before starting the engines the ERC handles must be in the neutral position.*

5. At the active standard helm, move the ERC handles to the neutral position.

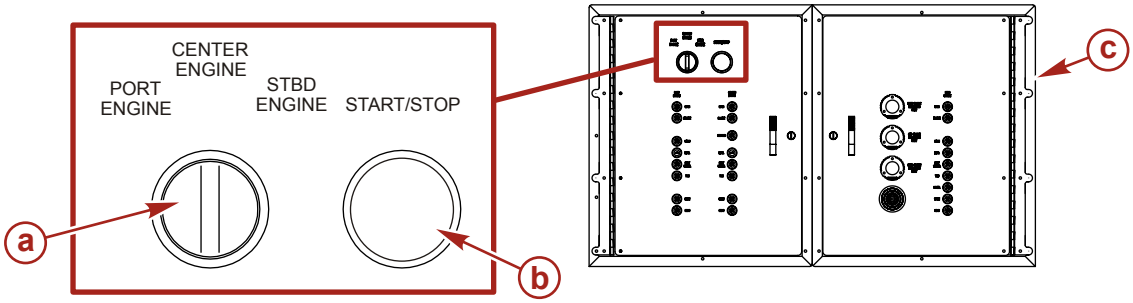
   NOTE: *Ask your dealer for the location of the key switches if the key switches are not located at the helm.*

6. Turn the key switch to the on position for each engine to be started.
7. Verify it is safe to start the engines.
8. In the engine room, locate the VIP for each engine.
   IMPORTANT: The start/stop switch or "SMARTSTART" switch on a VIP will start the corresponding engine regardless of which helm station is active or previously active.
9. Inside the VIP for triple or quad installations, turn the engine selector switch to the desired engine or engines.

10. Press and release the start/stop switch or green "SMARTSTART" (start/stop) switch on the VIP corresponding to the engine being started. The control system automatically controls the starter to achieve a successful start.

50531

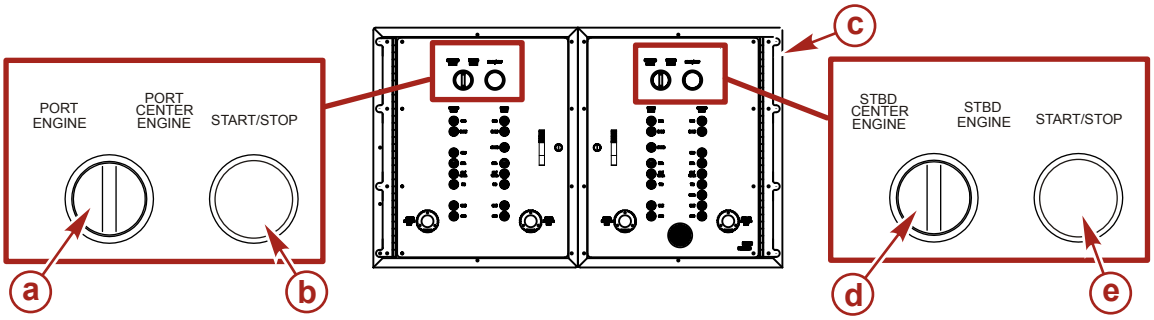
a - "E-STOP" switch—for emergency use only
b - "START/STOP" switch



43957

Typical SmartCraft 3.0 VIP for triples

a - Engine selector switch
b - Start/stop switch
c - VIP



44350

Typical SmartCraft 3.0 VIP for quads

a - Engine selector switch (port and port center)
b - Start/stop switch
c - VIP
d - Engine selector switch (starboard center and starboard)
e - Start/stop switch

IMPORTANT: To avoid excessive exhaust aeration of the seawater, do not operate the engines over 1500 RPM when the vessel is at rest.

11. If you must operate the engines above 1500 RPM, put the vessel underway with a light throttle load until the engines reach normal operating temperature.

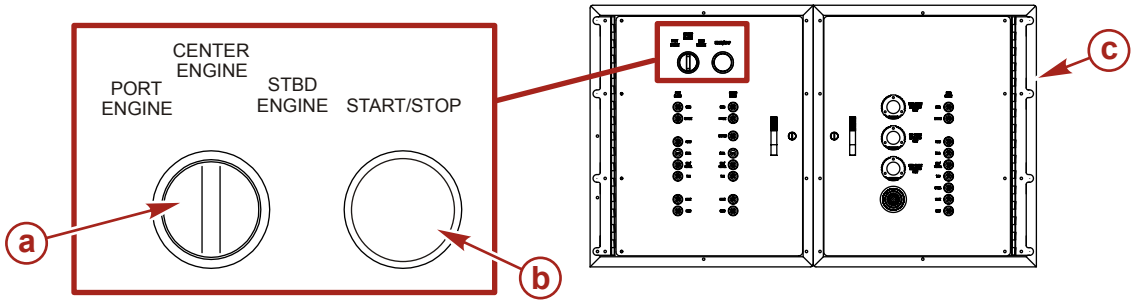
Stopping the Engine Using the VIP SmartStart Switch

You may desire to stop an engine from the engine room or under certain circumstances the engine control system may not be able to automatically stop an engine. The engines can be stopped using the "SMARTSTART" (start/stop) switch on the VIP for each engine.

1. Move the ERC handles to the neutral position.
2. Locate the VIP for each engine in the engine room.
3. Inside the VIP for triple or quad installations, turn the engine selector switch to the desired engine or engines.
4. When the engines are running, press and release the start/stop switch or the green "SMARTSTART" (start/stop) switch for each engine you want to stop.

50531

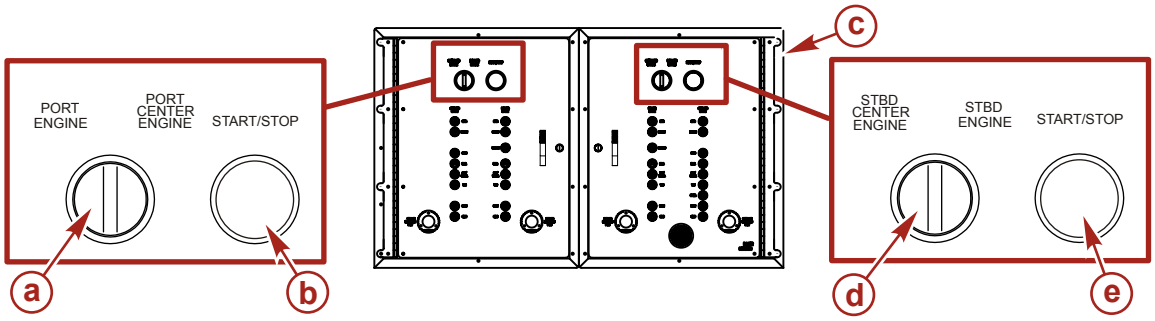
a - "E-STOP" switch—for emergency use only
b - "START/STOP" switch



43957

Typical SmartCraft 3.0 VIP for triples

a - Engine selector switch
b - Start/stop switch
c - VIP



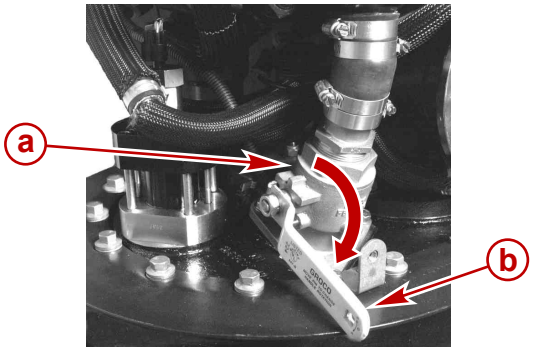
44350

Typical SmartCraft 3.0 VIP for quads

a - Engine selector switch (port and port center)
b - Start/stop switch
c - VIP
d - Engine selector switch (starboard center and starboard)
e - Start/stop switch

5. Turn the key switch to the off position for each engine that was stopped.

6. Close the seawater return seacock, if equipped. Rotate the handle in the direction indicated by the arrow.



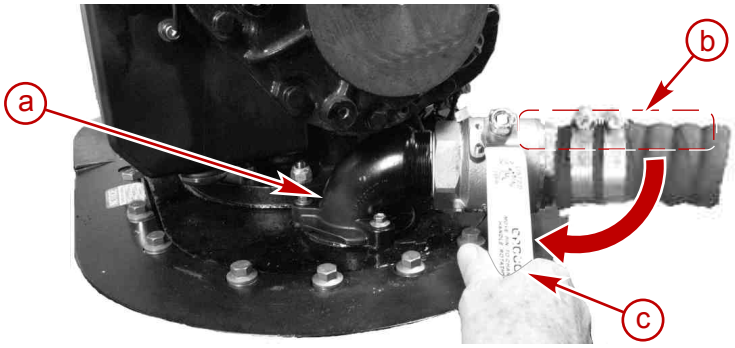
41199

Drive cover removed for clarity

a - Seawater return seacock, if equipped

b - Handle in closed position

7. Close the seacock for the seawater inlet. Rotate the handle in the direction indicated by the arrow.



41196

Typical inlet seacock—port orientation (starboard similar)

a - Seacock for seawater inlet

b - Former position (open)

c - Handle in closed position

Electronic Helm Steering

The electronic helm steering operates using electrical signals. A computer-controlled electric motor attached to the steering wheel 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 are familiar with the system's handling characteristics and the boat's response. The electronic steering may provide a faster steering response than expected.

To confirm your steering range from lock to lock, ensure that the starboard engine key switch is on. The engines do not have to be running. Turn the wheel to starboard until the wheel stops at the starboard lock or end-stop. The end-stop is electronically set by the electric motor attached to the steering wheel. Begin turning the wheel to port and count the number of revolutions until the wheel stops at the port lock. The number of wheel revolutions you counted moves the drives from the maximum starboard angle to maximum port angle, with the center (straight-ahead position) being 0°. The maximum steering angles are controlled within the vessel personality developed by the drive manufacturer and the boat OEM.

In certain situations the electronic end-stops of the wheel are **not** felt. The absence of noticeable end-stops does not affect the steering. The drives will still stop when they reach the full turn position at each lock. The absence of end-stops can be the result of the starboard key switch in the off position, a low starboard battery voltage, or a steering wheel motor fault.

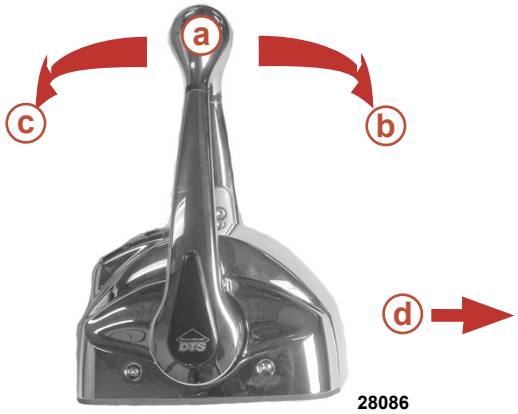
Your vessel's personality, as developed by the vessel manufacturer in partnership with the drive manufacturer, determines the number of turns lock to lock. Typically, this is approximately 2-3/4 revolutions of the wheel. The OEM may request different lock to lock settings for other boat models.

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

Operation

The electronic remote control (ERC) handle controls the operation of shift and throttle. 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, gear position is determined by the position of the shift valves on the transmission, not the position of the ERC levers. When using the joystick or while in Skyhook, the computer moves the transmission in and out of gear even though the handles are in neutral.*



28086

- **a -** Neutral
- **b -** Forward
- **c -** Reverse
- **d -** Bow of boat

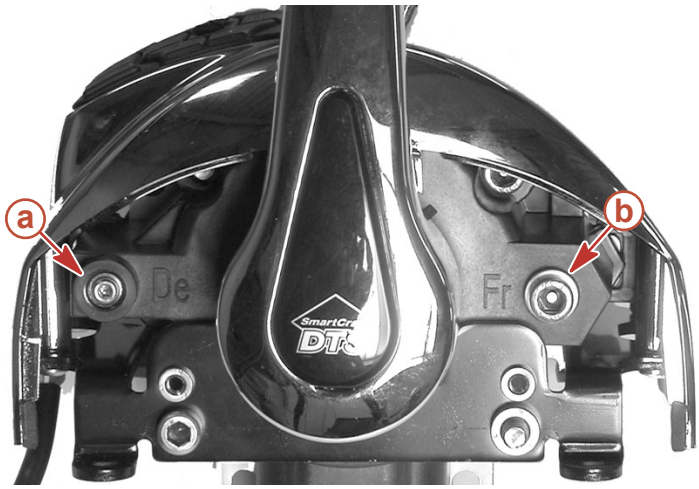
The amount of force needed to move the ERC handles and to move the ERC handles through the detents is adjustable to help prevent unwanted motion of the handle in rough water.

To adjust the ERC handle detent tension:

1. Remove the side cover of the handle needing adjustment.
2. Turn the adjustment screw clockwise to increase tension on the control handle and counterclockwise to decrease tension.
3. Adjust to tension desired.

To adjust ERC handle tension:

1. Remove the side cover of the handle needing adjustment.
2. Turn the adjustment screw clockwise to increase tension on the control handle and counterclockwise to decrease tension.
3. Adjust to tension desired.



28087

Starboard side cover removed, port similar

- **a -** Detent tension adjustment screw, labeled "De"
- **b -** Handle tension adjustment screw, labeled "Fr"

Basic Joystick Operation

The joystick offers precise, intuitive control of your boat during low speed and docking maneuvers. The joystick translates the movement of the joystick into similar movement in the boat. Engine speed is limited in this mode to prevent unacceptable boat dynamics during maneuvers.

While operation with the joystick is easy to learn, we recommend that you drive the boat in the traditional way until you can spend time in an open area free of obstructions and traffic to learn how your boat responds to inputs. Further, we recommend that you occasionally practice maneuvering in the traditional way to maintain your traditional drive docking skills in case joystick control is temporarily not available.

Electrical System Overload Protection

If an electrical overload occurs, a fuse or a circuit breaker opens. Find and correct the cause for the electrical overload before replacing the fuse or resetting the circuit breaker.

NOTE: *In an emergency, when you must operate the engine and cannot locate or correct the cause for the electrical overload (high current draw), turn off or disconnect all the accessories connected to the engine and instrumentation wiring. Reset the circuit breaker or replace the fuse. If the circuit remains open, the electrical overload has not been eliminated. Contact your Mercury Diesel authorized repair facility to check the electrical system.*

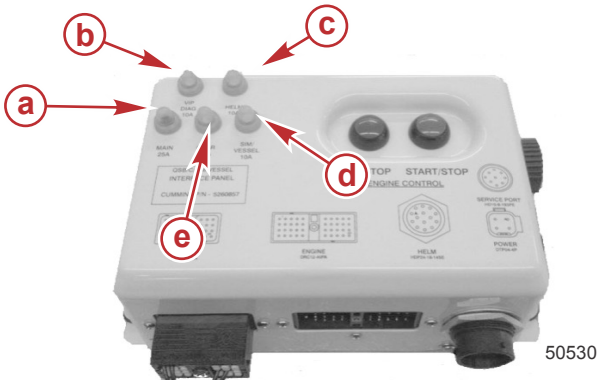
Circuit breakers and fuses provide protection for the electrical system as indicated. The circuit breakers and fuses are located in various locations throughout the boat. Have your dealer show you the location and identify the circuit that they protect.

After finding and correcting the cause of the overload, reset the circuit breaker by pressing the reset button.

Vessel Interface Panel (VIP) Overload Protection

The vessel interface panel (VIP) contains five circuit breakers that help protect the transmission harness, engine harness, vessel sensor harness, and helm harness.

NOTE: *A VIP for each engine is located in the engine room.*



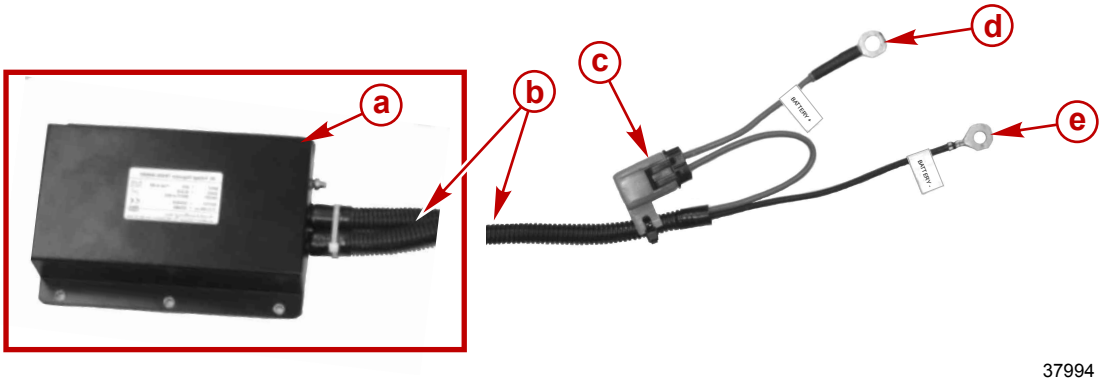
- **a -** Main circuit breaker (25 amp)
- **b -** VIP diagnostic circuit breaker (10 amp)
- **c -** Helm circuit breaker (10 amp)
- **d -** SIM/vessel circuit breaker (10 amp)
- **e -** Gear circuit breaker (15 amp)

Item	Circuit Breaker Rating	Protection	Location on VIP
a	25 A	Main	Lower left
b	5 A	VIP diagnostics	Upper left
c	10 A	Helm	Upper right
d	10 A	SIM/vessel	Lower right
e	15 A	Gear	Lower center

Overload Protection for the DC Voltage Regulator System, If Equipped

If the vessel is equipped with a 24-volt system, a DC voltage regulator is required to supply 12-volt power to the VIP and the other 12-volt circuits. The power package manufacturer provides a protective fuse for the 24-volt DC to 12-volt DC voltage regulator system, if equipped. The spade-style, in-line fuse is located in the harness between the voltage regulator and the 24-volt battery system. The fuse protects the wiring and the regulator against overloads.

NOTE: *For additional information on the on-off switch for the DC voltage regulator, refer to your owner's manual.*



a - DC voltage regulator
b - Wiring to DC voltage regulator
c - 30-amp fuse and holder
d - To 24-volt battery system positive (+)
e - To 24-volt battery system negative (–)

The boat manufacturer may replace the fuse and holder with a circuit breaker. Have your boat manufacturer or dealer show you the location and identify the fuse or circuit breaker for your reference.

Overload Protection for Other Circuits

Other circuits may be protected by circuit breakers or fuses installed by the boat manufacturer and can vary in appearance and location.

For example, the MerCathode system has a 20-amp in-line fuse in the wire that connects from the positive (+) battery terminal to the positive (+) terminal on the controller. If the fuse is defective (open), the system will not operate, resulting in a loss of corrosion protection. Have your dealer show you the location of and service procedures for the fuse.

Ask your dealer for the location and operation instructions of all overload protection devices.

Galvanic Isolator and Monitor

These power packages feature anodes as standard equipment to help protect them from galvanic corrosion under moderate conditions. The MerCathode System and sacrificial anodes provide corrosion protection under normal usage.

Boats connected to AC shore power require additional protection to prevent destructive low-voltage galvanic currents from passing through the shore-power ground wire. A Quicksilver Galvanic Isolator or equivalent isolation device is recommended to block the passage of these currents while providing a path to ground for dangerous fault (shock) currents.

IMPORTANT: If AC shore power is not isolated from boat ground, the MerCathode System and anodes may be unable to handle the increased galvanic corrosion potential.

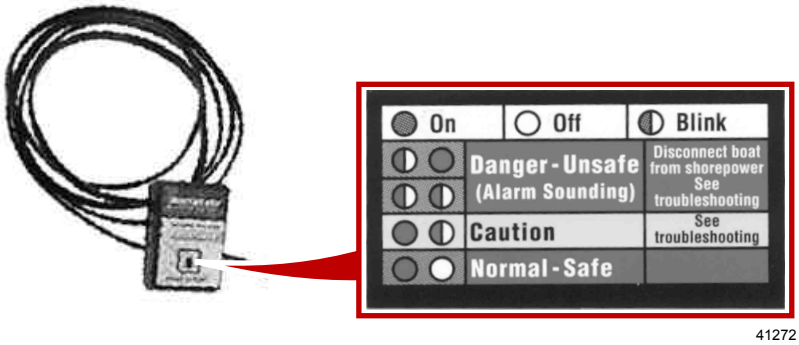
A Quicksilver Galvanic Isolator kit includes an audio and visual monitor to alert you to faults that occur. The monitor is a microprocessor controlled, solid state device that will test the integrity of the Quicksilver Galvanic Isolator and the safety grounding lead. This device will also supply impressed current to the drive to aid in corrosion protection.

⚠ WARNING

Improperly conducted AC shore power is an electric shock hazard that can result in damage and injury. The AC grounding conductor green wire must be connected between the boats electrical system and the shore power connection in order to provide a path for fault current and to assist the MerCathode in preventing galvanic corrosion on drive components. Install a galvanic isolator or similar isolation device in the AC shore power system in the vessel. Consult a qualified marine electrician for more information.

IMPORTANT: If the Galvanic Isolator alarm sounds and the monitor will not respond to the reset button, AC fault current may be present and the shore power safety grounding conductor circuit to shore may be an open circuit. Disconnect shore power immediately.

Refer to **Troubleshooting—Galvanic Isolator** for an explanation of the conditions or faults that may be displayed by the monitor.



Galvanic Isolator Monitor and conditions

NOTE: *If your vessel is equipped with a galvanic isolator from a manufacturer other than Quicksilver, refer to the instructions provided by the manufacturers.*

Section 3 - On the Water

Table of Contents

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 to maintain 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.** As an example, your boat traveling at 40 km/h (25 mph) will overtake a fallen skier who was 61 m (200 ft) in front of you in five seconds.
- **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.

Be Alert to Carbon Monoxide Poisoning

Carbon monoxide is present in the exhaust fumes of all internal combustion engines including the outboards, sterndrives, and inboard engines that propel boats, as well as the generators that power various boat accessories. Carbon monoxide is a deadly gas that is odorless, colorless, and tasteless.

Early symptoms of carbon monoxide poisoning, which should not be confused with seasickness or intoxication, include headache, dizziness, drowsiness, and nausea.

⚠ WARNING

Carbon monoxide poisoning can lead to unconsciousness, brain damage, or death. Keep the boat well ventilated while at rest or underway and avoid prolonged exposure to carbon monoxide.

Good Ventilation

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

Example of desired air flow through the boat

mc79553-1

Poor Ventilation

Under certain 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 an operating engine may be exposed to a hazardous level of carbon monoxide.

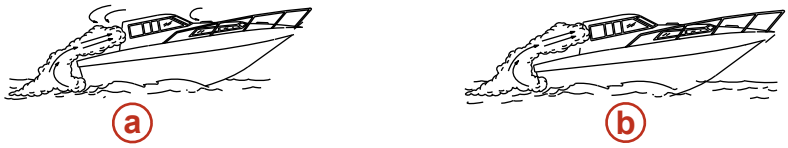
1. Examples of poor ventilation while a boat is stationary:

mc79554-1

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

b - Mooring close to another boat with its engine operating

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



mc79556-1

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)

Basic Boat Operation

Cold Weather (Freezing Temperature), Seasonal Storage, and Extended Storage

IMPORTANT: Mercury Marine strongly recommends that this service be performed by a Mercury Diesel authorized repair facility. Damage caused by freezing is not covered by the Mercury Marine Limited Warranty.

NOTICE

Water trapped in the seawater section of the cooling system can cause corrosion or freeze damage. Drain the seawater section of the cooling system immediately after operation or before any length of storage in freezing temperatures. If the boat is in the water, keep the seacock closed until restarting the engine to prevent water from flowing back into the cooling system. If the boat is not fitted with a seacock, leave the water inlet hose disconnected and plugged.

NOTE: *As a precautionary measure, attach a tag to the key switch or steering wheel of the boat reminding the operator to open the seacock or unplug and reconnect the water inlet hose before starting the engine.*

A boat is considered to be in **storage** whenever it is not in operation. The amount of time that the power package is not operated may be for a brief period, such as during a day, overnight, for a season, or for an extended period of time. Certain precautions and procedures must be observed to protect the power package from freeze damage, corrosion damage, or both types of damage during storage.

Freeze damage can happen when water trapped in the seawater cooling system freezes. For example, after operating the boat, exposure to freezing temperatures for even a brief period of time could result in freeze damage.

Corrosion damage is the result of saltwater, polluted water, or water with a high mineral content trapped in the seawater cooling system. Saltwater should not stay in an engine's cooling system for even a brief storage time; drain and flush the seawater cooling system after each outing.

Cold weather operation refers to operating the boat whenever the possibility of freezing temperatures exists. Likewise, cold weather (freezing temperature) storage refers to whenever the boat is not being operated and the possibility of freezing temperatures exists. In such cases, the seawater section of the cooling system must be completely drained immediately after operation.

Seasonal storage refers to when the boat is not being operated for one month or more. The length of time varies depending on the geographic location of the boat in storage. Seasonal storage precautions and procedures include all of the steps for cold weather (freezing temperature) storage and some additional steps that must be taken when storage will last longer than the short time of cold weather (freezing temperature) storage.

Extended storage means storage for a period of time that may last for several seasons or longer. Extended storage precautions and procedures include all of the steps for cold weather (freezing temperature) storage and seasonal storage plus some additional steps.

Refer to the specific procedures in this section related to the conditions and the length of storage for your application.

Drain Plug and Bilge Pump

The engine compartment in your boat is a natural place for water to collect. For this reason, boats are normally equipped with a drain plug, a bilge pump, or both a drain plug and a bilge pump. Install the drain plug and check the operation of the bilge pump, if equipped, before putting the boat in the water.

Check these items on a regular basis to ensure that the level of water does not come into contact with your power package. Components on your engine will be damaged if submerged.

Damage caused by submersion is not covered by the Mercury Diesel Limited Warranty.

Protecting People in the Water

While the Boat is Moving

A person in the water may find it very difficult to take quick action to avoid a boat heading in their direction, even at slow speeds.

Always slow down and exercise extreme caution any time you are boating in an area where there might be people in the water.

Whenever a boat is moving (even coasting) and the gear shift is in neutral, there is sufficient force by the water on the propeller to cause the propeller to rotate. This neutral propeller rotation can cause serious injury.

While the Boat is Stationary

⚠ 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.

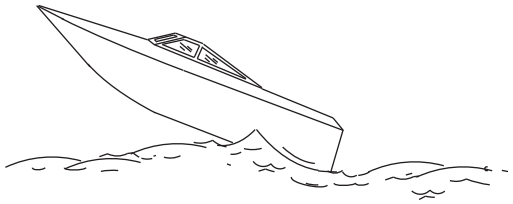
Shift into neutral and shut off the engines before allowing people to swim or be in the water near your boat.

Do not allow people to swim around the boat with the Skyhook Electronic Anchor engaged. The Skyhook Electronic Anchor causes the drives to move and the propellers to turn without notice. Having the engines in neutral does not protect the swimmers. Swimmers in the area of the propellers are at risk of getting injured.

Wave and Wake Jumping

⚠ WARNING

Wave or wake jumping can cause serious injury or death from occupants being thrown within or out of the boat. Avoid wave or wake jumping whenever possible.



mc79680-1

Operating recreational boats over waves and wakes is a natural part of boating. However, when this activity is done with enough speed to force the boat hull partially or completely out of the water, certain hazards arise, particularly when the boat re-enters the water.

The primary concern is the boat changing direction while in the midst of the jump. In such cases the landing may cause the boat to violently veer in a new direction. Such a sharp change in direction or turn can cause occupants to be thrown out of their seats or out of the boat.

Impact with Underwater Hazards

Reduce speed and proceed with caution whenever you are driving a boat in shallow water or in areas where the waters are suspected of having floating or underwater obstacles that could be struck by the underwater drive components, skegs, or the boat bottom.

27301

IMPORTANT: The most important thing you can do to help reduce injury or impact damage from striking a floating or underwater object is control the boat speed. Under these conditions, reduce boat speed to a minimum.

The following demonstrate some, but not all, examples of what can happen if the boat strikes a floating or underwater object:

- The boat could move in a new direction. Such an unexpected change in direction or turn can throw occupants out of their seats or out of the boat.
- A rapid reduction in speed. This can cause occupants to be thrown forward, even out of the boat.
- Impact damage to the underwater drive components, skeg, or boat.

Keep in mind that one of the most important things you can do to help reduce injury or impact damage in these situations is control the boat speed when driving in waters known to have underwater obstacles.

After striking a submerged object, stop the engine as soon as possible and inspect the drive systems for any broken or loose parts, and the hull for any damage. If damage is present or suspected, the power package should be taken to a Mercury Diesel authorized repair facility for a thorough inspection and any necessary repair.

The boat should be checked for hull fractures, transom fractures, and water leaks.

⚠ WARNING

Operating a boat or engine with impact damage can result in product damage, serious injury, or death. If the vessel experiences any form of impact, have an authorized Mercury Marine dealer inspect and repair the vessel or power package.

Operating with damaged underwater drive components or boat bottom could cause additional damage to other parts of the power package, or could affect control of the boat. If continued operation is necessary, do so at greatly reduced speeds.

Zeus Drive Impact Protection

IMPORTANT: Although the design of the Zeus drive provides some impact protection, no design can ensure total protection from impact damage under all conditions.

The Zeus drive has some impact protection by design, since the drive is mounted in a tunnel above the bottom of the hull. If the drive strikes a floating or submerged object while the boat is moving, the skeg is designed to break away, absorbing some of the impact and possibly reducing damage to the propellers and the exposed lower part of the drive. In extreme cases, large fixed or floating objects struck by the skeg and the exposed lower part of the drive may cause the lower part of the drive to shear off. This shearing off of the lower part of the drive is a design feature to protect the hull and drive system.

NOTE: *If the lower part of the drive shears off due to a severe impact, make immediate note of the GPS location to assist in recovery efforts. If recovery of the damaged parts of the drive is possible, return the damaged parts to your authorized Mercury Diesel repair facility for possible repair and reuse.*

If an impact occurs and damage is present or suspected, if the boat does not respond as it should, or if water is present in the gear lube monitor bottle, have your boat inspected at the nearest Mercury Diesel authorized repair facility.

Operating in reverse gear offers less impact protection. Use extreme caution when operating in shallow water or where underwater objects are known to be present. Use extreme care to prevent striking submerged objects while operating in reverse.

Zeus Drive Alignment

The Zeus drives are aligned by the boat manufacturer, and must not be adjusted by anyone other than your Mercury Diesel authorized service and repair facility. The Zeus drives will automatically recalibrate to this setting at each startup. The drives do not need to be realigned under normal use.

Conditions Affecting Boat Operation

Weight Distribution (Passengers and Gear) Inside the Boat

Shifting weight to the rear (stern):

- Causes the bow to bounce in choppy water.
- Increases the danger of a following wave splashing into the boat when coming off plane.
- Can cause the boat to porpoise at extremes.

Shifting weight to the front (bow):

- Improves ease of planing.
- Improves rough water ride.
- Can cause the boat to veer back and forth (bow steer) at extremes.

Bottom Of Boat

To maintain maximum speed, the boat bottom should be:

- Clean and free of barnacles and marine growth.
- Straight and smooth (fore and aft).

Marine vegetation can accumulate when the boat is docked. Remove this growth before operation; it can clog the water inlets and outlets, causing the engine to overheat.

Cavitation

Cavitation occurs when water flow cannot follow the contour of a fast-moving underwater object, such as a gear housing or a propeller. Cavitation increases propeller speed while reducing boat speed. Cavitation can seriously erode the surface of the gear housing or the propeller. Common causes of cavitation are:

- Weeds or other debris snagged on the propeller
- Bent propeller blade
- Raised burrs or sharp edges on the propeller

Ventilation

Ventilation is caused by surface air or exhaust gases that are introduced around the propeller resulting in propeller speed-up and a reduction in boat speed. Air bubbles strike the propeller blade and cause erosion of the blade surface. If allowed to continue, eventual blade failure (breakage) will occur. Excessive ventilation is usually caused by:

- A missing propeller diffuser ring.
- A damaged propeller or gear housing, which allows exhaust gases to escape between propeller and gear housing.

Propeller Selection

IMPORTANT: The installed propellers must allow the engine to reach engine rated speed (RPM) with the boat fully loaded and with all customer stores onboard. With the boat less than fully loaded the engines should reach engine rated speed (RPM) with less than a 100% load. Use the VesselView display to verify engine RPM and percent load.

It is the responsibility of the boat manufacturer or the selling dealer to equip the power package with the correct propellers. Refer to the engine information data tag located on the engine for the specified engine rated speed (RPM). Information for the location of the engine data tag can be found in the engine owner's manual.

If full throttle engine RPM is below the engine rated speed (RPM), the propellers will have to be changed to prevent loss of performance and possible engine damage.

After initial propeller selection, certain issues may require a propeller with a lower pitch. They include:

- Operating with increased load (additional passengers or gear).
- Shifting the center of gravity of the vessel.
- The addition of towers or canvas.
- Fouling of the hull and running gear.
- High ambient temperatures.
- Operating at high elevation.

It is the responsibility of the boat owner to ensure that the correct propellers are installed at delivery and maintained over the life of the boat. Because of the many variables of boat design, only testing will determine the best propeller for a particular boat. If the engine is not able to reach the engine rated speed (RPM), contact your boatbuilder, boat dealer, or an authorized Mercury Diesel repair facility for assistance in propeller selection. A list of propellers for the Zeus drive can be located in the Zeus drive parts manual. Refer to the Zeus drive **Mercury Parts Manual—90-879150112**.

Getting Started

Break-In Period (New or With Replacement Gears)

Always perform these procedures on new drive units. This break-in procedure allows the proper seating of drive unit gears and related components, which greatly reduces the likelihood of problems.

- Avoid full throttle starts.
- Do not operate at any one constant speed for extended periods of time.
- Do not exceed 75% of full throttle during the first five hours. During the next five hours, operate at intermittent full throttle.
- Shift the drive into forward gear a minimum of 10 times during break-in, with run-in time at moderate RPM after each shift.
- After the first 25 hours and not to exceed 30 hours, change the transmission fluid and filter including the transmission fluid in the drop box, if equipped.
- After the first 25 hours and not to exceed 30 hours, replace the drive gearcase fluid with High Performance Gear Lube.

DC Voltage Regulator Switch, If Equipped

If the vessel is equipped with a 24-volt system, a DC voltage regulator is required to supply 12-volt power to the VIP and the other 12-volt circuits. To allow the regulator to be turned on and off a switch is provided by the boat manufacturer. The switch is on a separate circuit.

Switching the power on provides regulated power to the VIP and other 12-volt circuits to allow the vessel to start. Switching the DC voltage regulator off prevents the regulator from drawing power when the vessel is not operated.

Have your manufacturer or dealer show you the location and identify the DC voltage regulator switch for reference.

1. Turn the switch on before attempting to start the engine.
2. Leave the switch on when the vessel is operating.
3. Turn the switch off when the vessel is not operating.

Starting and Stopping the Engines

Your Zeus power package is equipped with a SmartStart system, that includes a start/stop button for emergency use that is remotely mounted in the vessel interface panel (VIP). The VIP is usually located in the engine room.

In normal circumstances, start and stop the engine from the helm using the start/stop button of the SmartStart system.

NOTICE

The seawater pumps on vessels equipped with Zeus pod drives can be damaged by excessive exhaust aeration due to inadequate water flow. To ensure adequate water flow across the seawater inlets, make sure that the vessel is underway before exceeding 1500 RPM.

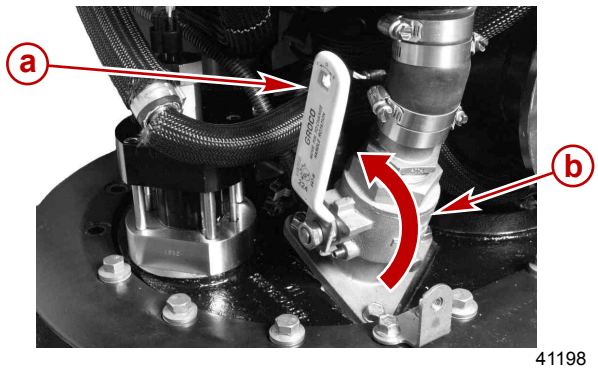
Starting an Engine Using the VIP SmartStart Switch

You may desire to start an engine from the engine room or under certain circumstances the engine control systems may not be able to automatically start an engine. The engines can be started using the "SMARTSTART" (start/stop) switch on the VIP for each engine.

1. Perform the checks and steps listed in the engine's operation and maintenance manual available for this package.

   NOTE: *Some vessels are not equipped with a seawater return seacock.*

2. Open the seawater return seacock, if equipped. Rotate the handle in the direction indicated by the arrow.



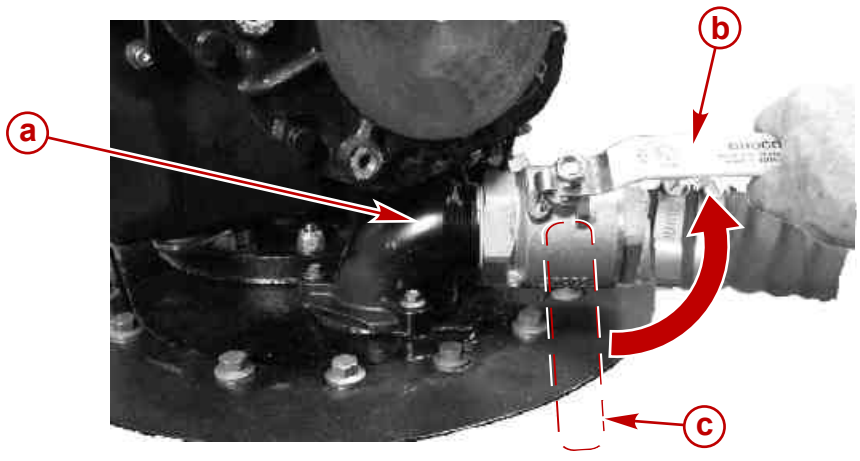
41198

Drive cover removed for clarity

a - Handle in open position

b - Seawater return (overboard) seacock, if equipped

3. Open the seacock for the seawater inlet. Rotate the handle in the direction indicated by the arrow.



41197

Typical inlet seacock—port orientation (starboard similar)

a - Seacock for seawater inlet

b - Handle in open position

c - Former position (closed)

4. Open the seacock (if equipped) for any accessory equipment.

   NOTE: *When the key switch is turned to the on position the neutral LED lights, on the ERC trackpad, flash on and off if the ERC handles are not in the neutral position. Before starting the engines the ERC handles must be in the neutral position.*

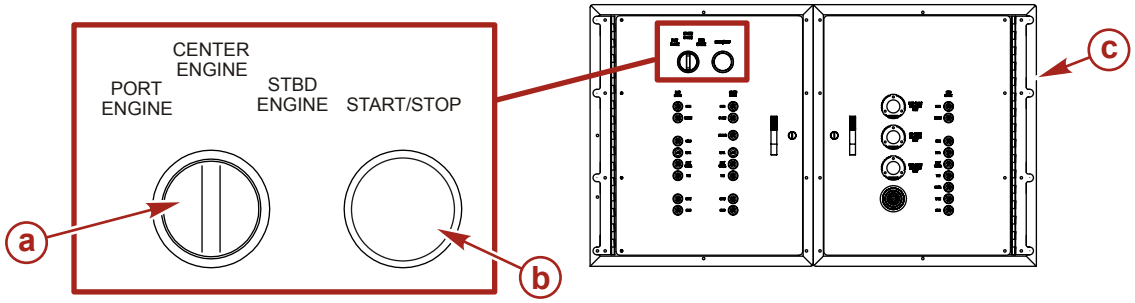
5. At the active standard helm, move the ERC handles to the neutral position.

   NOTE: *Ask your dealer for the location of the key switches if the key switches are not located at the helm.*

6. Turn the key switch to the on position for each engine to be started.
7. Verify it is safe to start the engines.
8. In the engine room, locate the VIP for each engine.
   IMPORTANT: The start/stop switch or "SMARTSTART" switch on a VIP will start the corresponding engine regardless of which helm station is active or previously active.
9. Inside the VIP for triple or quad installations, turn the engine selector switch to the desired engine or engines.
10. Press and release the start/stop switch or green "SMARTSTART" (start/stop) switch on the VIP corresponding to the engine being started. The control system automatically controls the starter to achieve a successful start.

50531

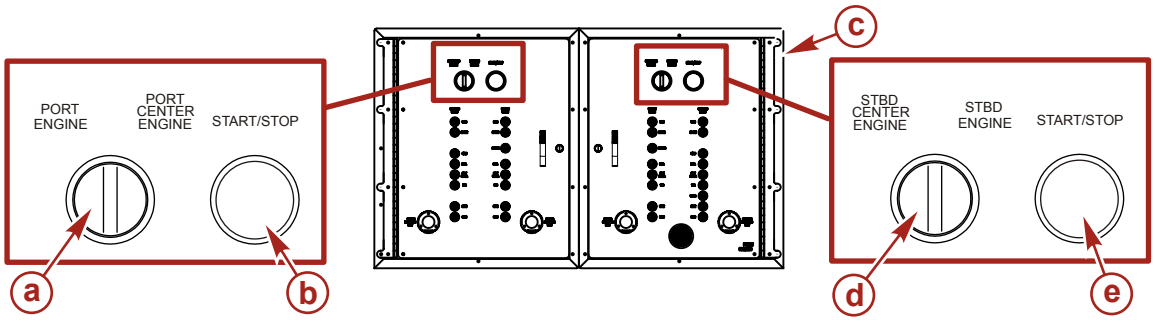
a - "E-STOP" switch—for emergency use only
b - "START/STOP" switch



43957

Typical SmartCraft 3.0 VIP for triples

a - Engine selector switch
b - Start/stop switch
c - VIP



44350

Typical SmartCraft 3.0 VIP for quads

a - Engine selector switch (port and port center)
b - Start/stop switch
c - VIP
d - Engine selector switch (starboard center and starboard)
e - Start/stop switch

IMPORTANT: To avoid excessive exhaust aeration of the seawater, do not operate the engines over 1500 RPM when the vessel is at rest.

11. If you must operate the engines above 1500 RPM, put the vessel underway with a light throttle load until the engines reach normal operating temperature.

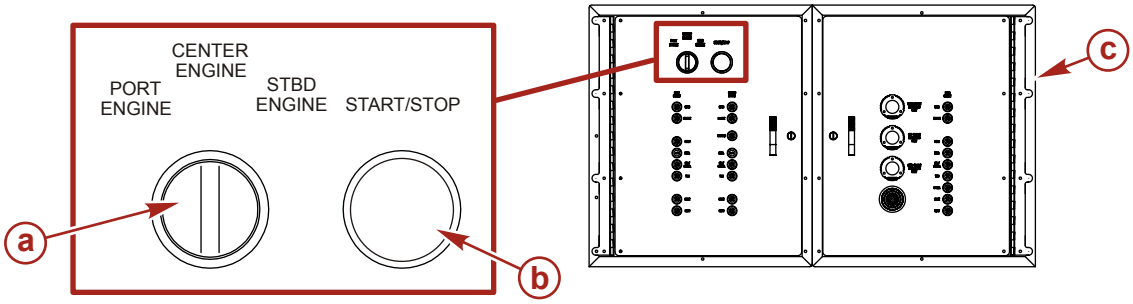
Stopping the Engine Using the VIP SmartStart Switch

You may desire to stop an engine from the engine room or under certain circumstances the engine control system may not be able to automatically stop an engine. The engines can be stopped using the "SMARTSTART" (start/stop) switch on the VIP for each engine.

1. Move the ERC handles to the neutral position.
2. Locate the VIP for each engine in the engine room.
3. Inside the VIP for triple or quad installations, turn the engine selector switch to the desired engine or engines.
4. When the engines are running, press and release the start/stop switch or the green "SMARTSTART" (start/stop) switch for each engine you want to stop.

50531

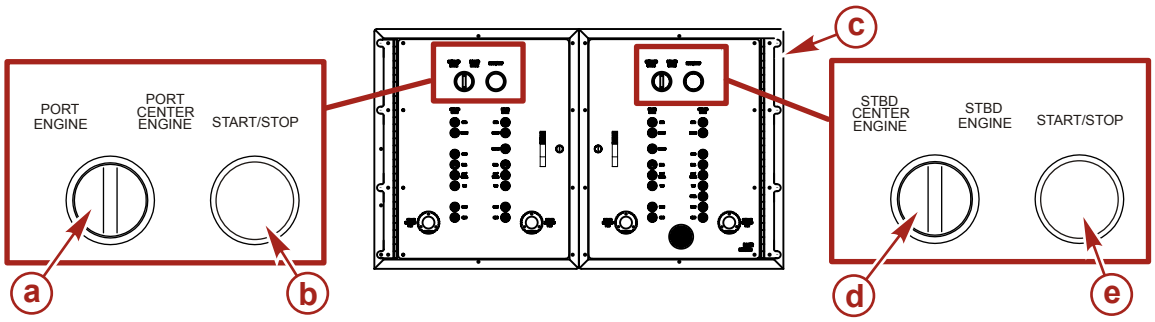
a - "E-STOP" switch—for emergency use only
b - "START/STOP" switch



43957

Typical SmartCraft 3.0 VIP for triples

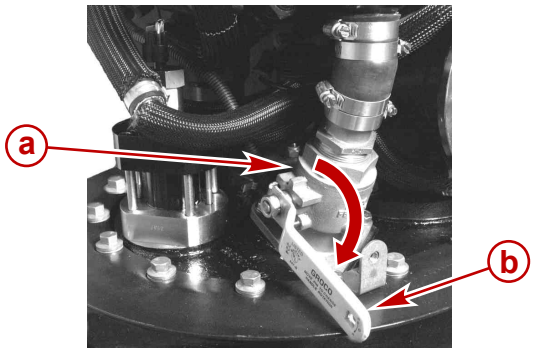
a - Engine selector switch
b - Start/stop switch
c - VIP



Typical SmartCraft 3.0 VIP for quads

- **a -** Engine selector switch (port and port center)
- **b -** Start/stop switch
- **c -** VIP
- **d -** Engine selector switch (starboard center and starboard)
- **e -** Start/stop switch

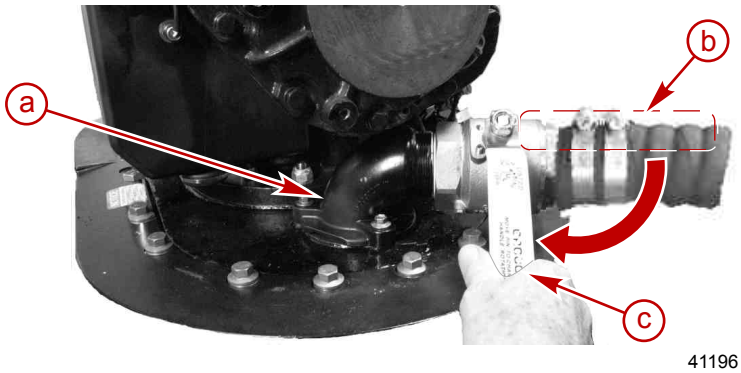
5. Turn the key switch to the off position for each engine that was stopped.
6. Close the seawater return seacock, if equipped. Rotate the handle in the direction indicated by the arrow.



Drive cover removed for clarity

- **a -** Seawater return seacock, if equipped
- **b -** Handle in closed position

7. Close the seacock for the seawater inlet. Rotate the handle in the direction indicated by the arrow.



Typical inlet seacock—port orientation (starboard similar)

- **a -** Seacock for seawater inlet
- **b -** Former position (open)
- **c -** Handle in closed position

Traditional Maneuvering with Steering and Thrust

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

NOTE: *During slow-speed turning with the wheel, the drive on the inside turns as much as 42° to create very tight turns. Different from traditional boats, to tighten the turn, you can increase power to the inside drive.*

To Maneuver the Boat in Forward

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

To Steer the Boat in Tight Turns at Low Speeds

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

To Spin the Boat on its Axis at Low Speeds

1. Center the steering wheel.
2. To spin to the right, place the starboard engine in reverse and the port engine in forward.
3. To spin to the left, place the port engine in reverse and the starboard engine in forward.
4. To increase the rate of turn, simultaneously adjust each ERC lever for more throttle.

Maneuvering with the Joystick

The joystick provides single lever interface to maneuver the vessel. Operating the vessel with the joystick is well suited for close quarter operations and when docking. The joystick causes the control system to independently control each pod angle and thrust to move or rotate the boat in a desired direction. For example, if you move the joystick sideways, the control system commands the boat in the sideways direction.

The joystick gives three axis control: fore and aft, port and starboard, and rotational, or any combination thereof. For example, moving the joystick to port causes the boat to move sideways to port. Rotating the joystick causes the boat to rotate around its center. You can move and rotate the joystick at the same time, allowing for very intricate movements for maneuvering in tight quarters.

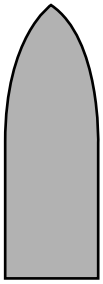
The control system automatically attempts to dampen bow and stern swinging (referred to as yaw) during joystick operation. An onboard sensor measures the yaw rate of the boat and actively counteracts the yaw motion of the boat. Factors, such as wind, water conditions, or vessel loading, may act upon the vessel beyond the systems capability to correct yaw. Manual yaw correction may be required when commanding the boat in the fore and aft, port and starboard, or diagonal directions. To correct for unintended yaw during any maneuver just rotate the joystick in the direction the bow is desired to rotate.

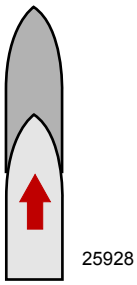
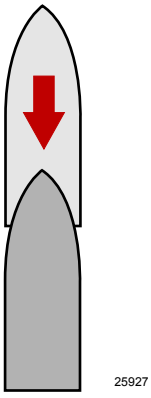
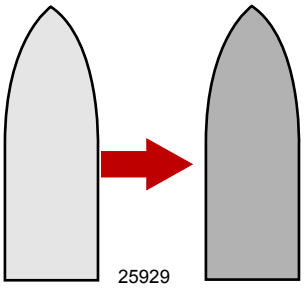
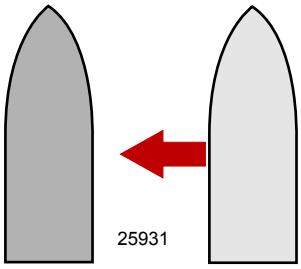
The following table gives some limited examples of the basic responses to inputs from the joystick. The joystick is proportional, which means that the farther from the center the joystick is moved, the more thrust is applied to the boat in that direction.

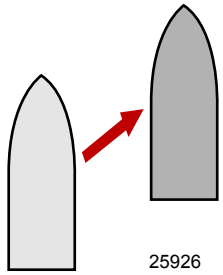
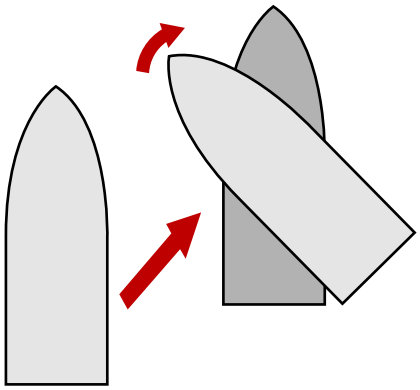
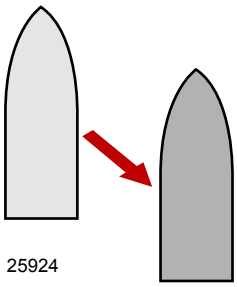
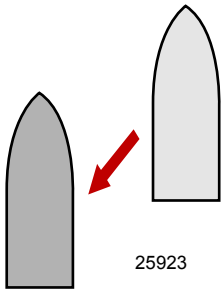
To maneuver the boat with the joystick:

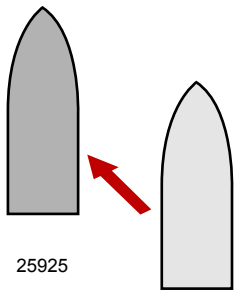
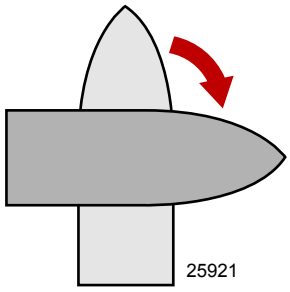
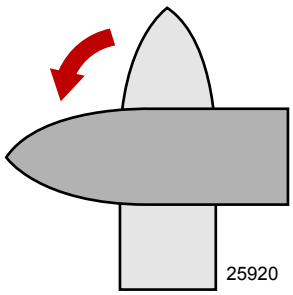
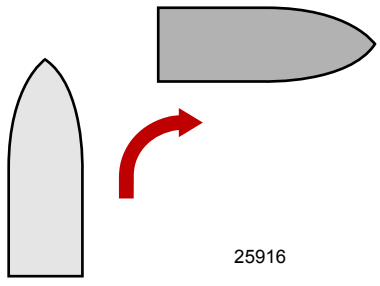
1. Move both electronic remote control (ERC) levers to the neutral position.
2. Move the joystick in the direction that you want the boat to move, or twist the joystick in the direction that you want the boat to rotate. The joystick can be moved and rotated at the same time.

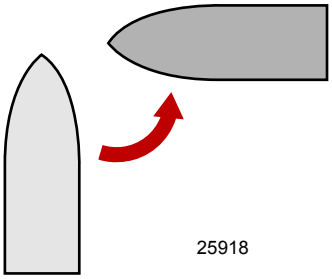
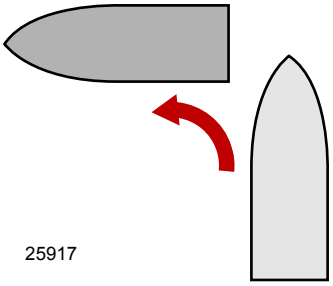
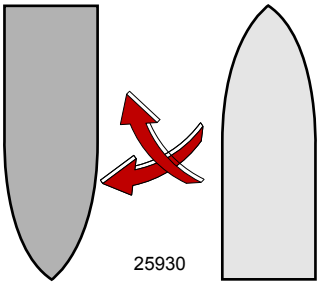
Joystick Input and Boat Response Table

Joystick Input	Boat Response	Movement (shown from light gray to dark gray)
 24704	Boat at rest	 25911

Joystick Input	Boat Response	Movement (shown from light gray to dark gray)
 24705	Boat moves forward	 25928
 24706	Boat moves aft	 25927
 24707	Boat moves to starboard without rotating	 25929
 24708	Boat moves to port without rotating	 25931

Joystick Input	Boat Response	Movement (shown from light gray to dark gray)
 24709	Boat moves diagonally forward and to the starboard without rotating	 25926
 24715	***NOTE:*** *In this maneuver move and twist the joystick for yaw correction, if required.* Boat moves diagonally forward and rotates starboard for yaw correction	 37774
 24710	Boat moves diagonally aft and to the starboard without rotating	 25924
 24711	Boat moves diagonally aft and to the port without rotating	 25923

Joystick Input	Boat Response	Movement (shown from light gray to dark gray)
 24712	Boat moves diagonally forward and to the port without rotating	 25925
 24713	Boat rotates clockwise	 25921
 24714	Boat rotates counterclockwise	 25920
 24715	Boat moves diagonally forward and to the starboard while rotating clockwise	 25916

Joystick Input	Boat Response	Movement (shown from light gray to dark gray)
 24718	Boat moves diagonally forward and to the starboard while rotating counterclockwise	 25918
 24719	Boat moves diagonally forward and to the port while rotating counterclockwise	 25917
 24720	Boat moves to the port while rotating clockwise	 25930

Trim Tabs

Automatic Control

The Zeus drive comes equipped with an automatic trim tab control feature that operates through the vessel control system to provide basic performance and efficiency improvements under normal conditions.

The automatic trim tab control feature can be engaged (turned on) or disengaged (turned off). To engage the feature, press the "AUTO" trim tab button once. The trim tabs will automatically adjust as the speed of the boat is changed. Pressing it again will disengage the feature.

With the automatic trim tab control feature engaged the port and starboard trim tab switches can be used to adjust the tabs (offset) for natural conditions that affect the attitude of the boat. This setting of the trim tab offset continues until the automatic control feature is disengaged and engaged again or when the key switch is cycled (turned off and on).

Manual trim tab control is available to allow trim tab adjustment when not using the automatic trim tab control feature. See **Manual Control**.

Typical automatic and manual trim tab switches

NOTE: *The port or starboard manual trim tab rocker switches allow some control of the attitude of the vessel. As an example, to achieve a port bow down attitude, you may press the port bow down rocker switch to deploy the trim tab on the starboard drive and provide the requested vessel attitude adjustment.*

Manual Control

To manually control or adjust the offset of the trim tabs for your conditions, use the individual port or starboard trim tab switches as needed. Manually adjusted trim tabs will stay in the position set by the operator until the key switch is cycled off and on or the "AUTO" button is pressed. If the "AUTO" button is pressed, the automatic trim tab control feature is engaged and the trim tabs move to a position based on boat speed. See **Automatic Control**.

NOTE: *When controlled manually the trim tabs do not move during acceleration unless the operator presses the trim tab buttons.*

Using Trim Tab Offset

Automatic or manual control of trim tab offset could be beneficial in the following conditions.

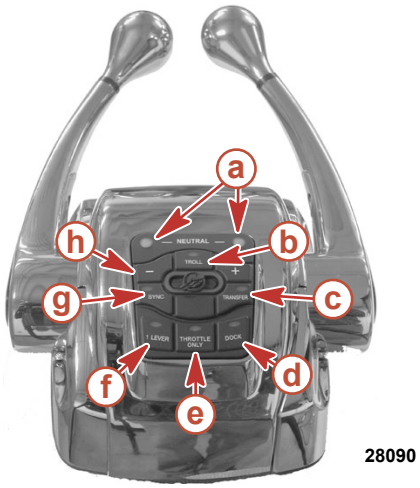
Getting on Plane	During initial acceleration the trim tabs are automatically adjusted (automatic control) or must be manually adjusted (manual control) to bring the boat on plane faster (bow down), to improve forward visibility, and use less power. As the boat comes on plane in automatic control, the trim tabs are brought up so the boat does not run with the bow too far down. For the best performance as the boat comes on plane in manual control, the port and starboard trim tabs must be adjusted up so the boat does not run with the bow too far down. In automatic control, the trim tabs can be adjusted (offset) with the port and starboard trim tab switches for best performance when the boat conditions are temporarily outside the normal operating conditions.
Smoothing the Ride	To avoid an uncomfortable, jarring ride in certain sea conditions, adjust the trim tabs using either automatic control or manual control. As the wave throws the bow up trim tabs dampen the boat's reaction, leveling and smoothing the ride. In a following sea, put the trim tabs up. This allows the bow to lift, offsetting the waves, which lift the stern. In milder water some boats gently porpoise. Lower the trim tabs, a little at a time, until the lope disappears.
Correcting a List	A boat list (leaning to port or starboard) can be caused by unbalanced load or several sea and weather conditions. Using the port or starboard trim tab switches, individual trim tab adjustments can be made in automatic control or manual control to correct a list.
Low Speed Trim	In controlled speed zones, many boats start to fall off plane as speed decreases, thereby reducing visibility. In automatic control or manual control, lowered trim tabs keep the boat on plane longer at lower speeds while maintaining a level boat attitude.

Special Digital Throttle and Shift (DTS) Features

The DTS system features several alternate operational modes for the electronic remote control (ERC) levers. Most of the listed features can be operated simultaneously and can help you with:

- Warming the engines.
- Trolling the vessel.
- Docking the vessel.

- Synchronizing the engines.
- Dual helm station transfer.



ERC with DTS trackpad

Item	Control	Function
a	"NEUTRAL" lights	Illuminate when the transmission is in the neutral gear position. The lights flash when the engine is in throttle only mode.
b	"TROLL"	Troll reduces the propeller speed to lower than that of engine speed for the first 25% of lever travel.
c	"TRANSFER"	Allows boat control to be transferred to a different helm. Refer to **Dual Helm Station Transfer**.
d	"DOCK"	Reduces the throttle capacity to approximately 50% of normal throttle.
e	"THROTTLE ONLY"	Allows the boat operator to increase engine RPM for warm-up, without shifting the transmission into gear.
f	"1 LEVER"	Enables the throttle and shift functions of both engines to be controlled by the starboard lever.
g	"SYNC"	Turns the auto-synchronization feature off or on. Refer to **Synchronizing Engines**.
h	"+" (increase) and "–" (decrease)	Increases and decreases idle speed only. The RPM range varies depending on application and engine model.

NOTE: *Not all functions may be active.*

Troll and Throttle Response

Troll mode allows the vessel to operate at very low speeds by controlling the transmission. The transmission is capable of reducing the propeller speed lower than the engine speed. Lever control is adjusted so that trolling occurs within the first 25% of lever travel. From 26% to 100% lever travel the engine operates between idle speed and maximum rated engine speed.

31463

"TROLL" button

To engage Troll mode:

1. Place both ERC levers in neutral.
2. Press the "TROLL" button, located on the DTS trackpad attached to the ERC levers.
3. Place either ERC lever into gear.
4. The "TROLL" button lights when the lever or levers are moved out of neutral.
5. The RPM of the engines do not change for the first 25% of ERC lever travel while the transmissions allow some slippage at lower speeds. Engine RPM rises through the remaining 75% of lever travel.

To disengage Troll mode:

1. Bring both ERC levers to neutral.
2. Press the "TROLL" button. The "TROLL" button light turns off.

Dock

Dock mode reduces the percent of throttle throughout the range by 50%. This allows better control of engine power in close quarter situations.

31464

"DOCK" button

To engage Dock mode:

1. Place both ERC levers in neutral.

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

To disengage Dock mode:

NOTE: *Dock only disengages with the levers in a detent.*

1. Bring both ERC levers to forward, neutral, or reverse detent.
2. Press the "DOCK" button. Dock mode disengages and the "DOCK" button light turns off.

Throttle Only

To engage Throttle Only mode:

1. Place both ERC levers in neutral.
2. Press the "THROTTLE ONLY" button, located on the DTS trackpad.

"THROTTLE ONLY" button

3. The "THROTTLE ONLY" button light illuminates and the neutral lights blink.
4. Place either ERC lever into gear.
5. The RPM of the engines can be raised, while the transmissions remain in neutral.

To disengage Throttle Only mode:

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

1. Bring both ERC levers to neutral. Throttle Only will not disengage unless the ERC levers are in neutral.
2. Press the "THROTTLE ONLY" button. The "THROTTLE ONLY" button light turns off.
3. Notice that the neutral lights remain on.

Single Lever (1 Lever) Operation

The Zeus single lever (1 Lever) feature simplifies engine management during rough sea conditions by allowing you to grasp a single lever to command both engines simultaneously.

To engage the single lever (1 Lever) mode:

1. Place both ERC levers in neutral.

2. Press the "1 LEVER" button located on the DTS trackpad attached to the ERC levers.

"1 LEVER" button

3. The "1 LEVER" button light turns on.
4. Place the starboard ERC lever into gear.
5. The engine RPM raises and lowers simultaneously while the transmissions remain in the same gear.

To disengage the single lever (1 Lever) mode:

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

Synchronizing the Engines

The system features an automatic engine synchronization feature called Sync. Sync engages automatically at key-up. The synchronization feature monitors the position of both ERC levers. If both levers are within 10% of one another, the port engine synchronizes to the starboard engine's RPM.

VesselView shows an orange icon if the RPM of the engines are not within 10% of each other, and the icon turns green when they synchronize. The icon turns grey when Sync mode is off.

To disengage Sync mode:

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

"SYNC" button

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

Cruise Control

The VesselView system features integrated throttle cruise control called Cruise, which allows the operator to limit the peak RPM of choice below wide open throttle (WOT). Refer to the owners manual provided with your VesselView for operation instructions.

These additional notes are exclusive to your package:

- You can change or disengage Cruise through the VesselView screen at any time.
- Cruise resets when the key is turned off.
- If the cruise limit is changed while the levers are at WOT, Cruise gradually changes to the new speed.
- Cruise does not disengage if the ERC levers are at a higher engine speed than the actual RPM. Bring the levers back to the forward detent, then use VesselView to disengage Cruise.
- Skyhook does not function if Cruise is engaged.

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.

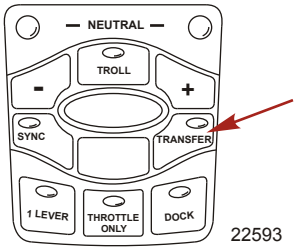
To avoid damage, use extra care when attempting a helm transfer while the vessel is close to docks, piers, or other fixed items or when near other vessels.

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 button light turns on and one beep will sound confirming the impending transfer.



"TRANSFER" button

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 should then be on.

2. With the "TRANSFER" button 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 button light turns off.

   NOTE: If the helm transfer is not completed in ten 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 Precision Pilot

Transferring control from an active helm to an inactive helm (from one station to another station) affects the functionality of Precision Pilot 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 causes Pilot to go to Standby mode. You will need to input information at the new helm in control.
- If engaged, Skyhook will disengage when the "TRANSFER" button is pressed the second time. You must engage Skyhook at the the newly active helm.
- The Resume feature for Auto Heading 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 chart plotter does not automatically transfer to the chart plotter at the requested helm. You must turn on the chart plotter at the newly active helm, input the waypoint or waypoint route to be tracked, and re-engage Track Waypoint.

Precision Pilot

Precision Pilot Trackpad Features

General Information

Precision Pilot trackpad features includes:

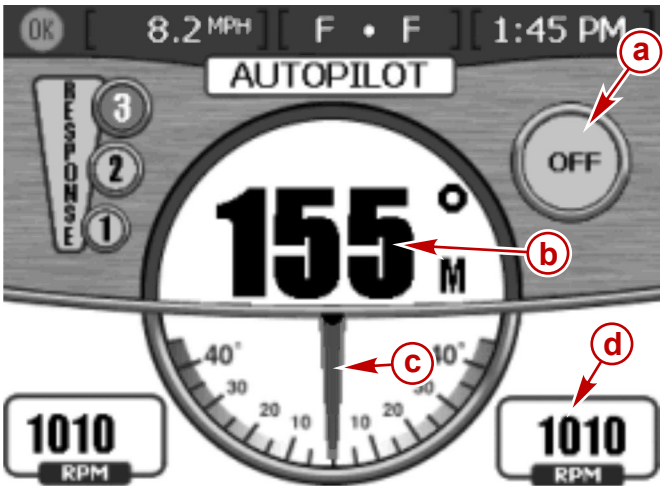
- Precision Pilot (or Pilot) functions are controlled through the Pilot trackpad only.
- Pilot screens are located under the Environment chapter of VesselView.
- The "TURN" buttons provide a 10° course correction for each press to the port or starboard.
- The "AUTO HEADING," "TRACK WAYPOINT," and "WAYPOINT SEQUENCE" buttons engage automatic course and heading modes.
- The steering wheel feels locked into a detent when Auto Heading or Track Waypoint are engaged. Manually overcoming the detent force of the steering wheel automatically puts Pilot into Standby mode.

Standby

The elements of the Standby screen are:

- In standby mode, the display shows a digital compass value and the angle of the drives.
- The compass value is the actual current heading from Pilot.
- On the right side of the screen, an icon labeled "OFF" indicates that Pilot is not engaged.

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



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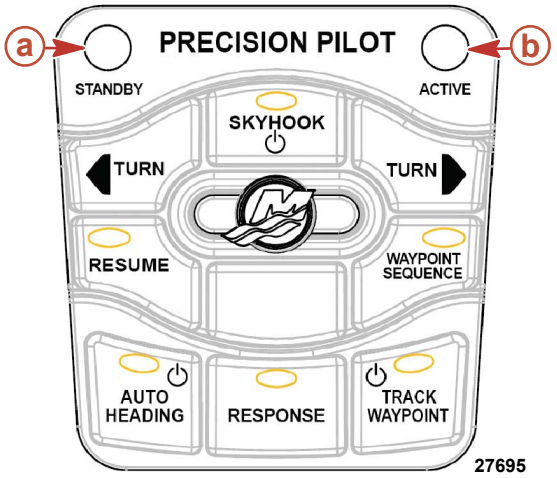
Standby screen on VesselView

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

Standby and Active Lights

Precision Pilot is disengaged (off) when the "STANDBY" light is illuminated. You must press the button for Auto Heading, Track Waypoint, or Skyhook to engage a mode.

When the "ACTIVE" light is illuminated one mode of Precision Pilot is engaged (on).



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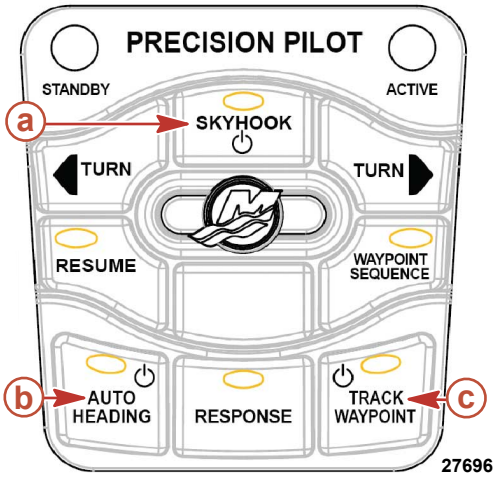
- **a -** "STANDBY" light
- **b -** "ACTIVE" light

Power Icon

The power icon located on the buttons for Skyhook, Auto Heading, and Track Waypoint indicate that the buttons can engage or disengage the Precision Pilot function they perform.



Buttons with Power icons

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

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.

Skyhook (if Equipped)

Your vessel may be equipped with a station keeping feature called Skyhook. Skyhook automatically maintains the heading and position of the boat within about 3 m (10 ft) of a set position. The control system for Skyhook uses GPS and compass heading information to automatically control shift, throttle, and steering to keep the boat in approximately one position.

The Skyhook feature can hold your boat nearly stationary, for example, while you wait for a space at the fuel dock, or while waiting for a bridge to open. You can also use Skyhook to maintain your boat's position when the water is too deep for an anchor.

To unlock and be able to use this feature you will have to contact your authorized Mercury Diesel repair facility.

Skyhook should not be used when the boat is next to a dock, or any other object, including other anchored boats. Because Skyhook holds the boat in an approximate position, not a precise one, it can cause your boat to collide with objects close to the boat causing damage to the boat and the nearby objects. Occasionally the Skyhook system may apply a brief surge in power while holding a position. This may cause a person standing near the edge of the boat to lose their balance and fall.

⚠ WARNING

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

To engage Skyhook the drives must be shifted into neutral. However, after engaging Skyhook the drive response is not the same as with drives normally shifted into neutral. The propellers will turn when Skyhook is activated, and propeller rotation may not be obvious. As in all boats when the engines are running, it is important to ensure no one is in the water near the boat and that the passengers are secure. Compliance with this practice is even more important when Skyhook is engaged.

Before engaging (activating) Skyhook the operator must:

- Inform passengers how Skyhook operates, to stay out of the water and off the swim platform, and to be alert for any sudden shifts in the boat position.
- Check to see no one is on the swim platform, or in the water anywhere near the boat.

When Skyhook is engaged the operator must:

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

The capability of Skyhook to maintain the position of the boat in a current is dependent on the characteristics of the boat. If you notice your boat drifting sideways while Skyhook is engaged, move the bow or stern more directly into the current to help reduce the effects of the current.

⚠ WARNING

When the Skyhook is engaged, the boat stays in a preset position; however, Skyhook can disengage unexpectedly. When Skyhook disengages, the boat does not hold the preset position and may drift, causing the potential of damage or personal injury. The helm operator must be able to take control of the boat when using Skyhook.

Skyhook relies on an operational GPS receiver and operational heading sensor. Occasionally, due to imperfect satellite communications, the GPS signal may be temporarily unavailable. Skyhook continues to operate through a GPS signal outage for up to 10 seconds, but automatically disengages if the GPS signal outage persists. If Skyhook disengages, you are alerted by the sound of a horn and the indicator light on the Precision Pilot keypad for the "SKYHOOK" button turns off. In such a circumstance, the boat will drift with the wind or current because the engines continue to run, but the drive units are now in neutral.

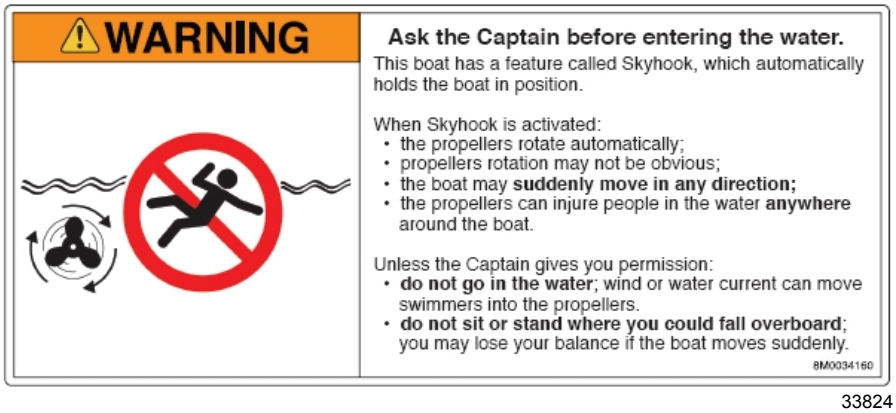
Skyhook performance is largely dictated by the performance of the onboard Zeus GPS system. The Zeus GPS system is accurate within 3 m (10 ft) when receiving a wide area augmentation system (WAAS) correction. WAAS is a system of satellites and ground stations that provide GPS signal corrections, allowing for more accurate positioning of your GPS. When WAAS is not available, the performance of the system maintains the boat within 20 m (60 ft) of the desired position.

Engaging (Activating) Skyhook

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

33798

Label adjacent to the Precision Pilot trackpad



33824

Label in the vicinity of the transom boarding area

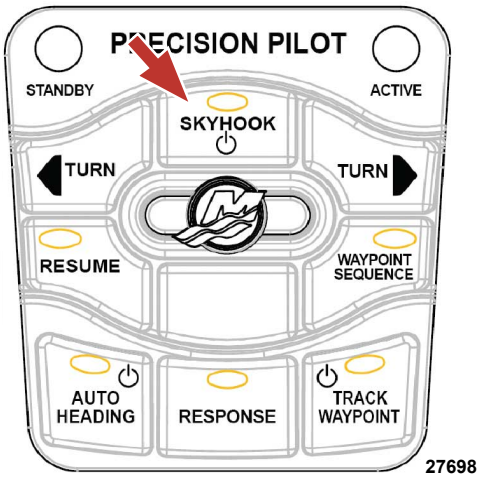
IMPORTANT: If either of the labels cannot be located or are not legible, they must be replaced before engaging Skyhook. For replacement labels, contact the manufacturer of your boat, or a Mercury Diesel authorized repair facility.

1. Move the ERC levers to neutral and bring the boat to a stop. Skyhook will not engage until the boat is in neutral and at a speed slow enough for safe engagement.
2. Inform passengers how Skyhook operates, to stay out of the water and off the swim platform, and to be alert for any sudden shifts in the boat position.
3. Check to see no one is on the swim platform, or in the water anywhere near the boat.

⚠ 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.

4. Press the "SKYHOOK" button to request engagement and operation of Skyhook.



"SKYHOOK" button

5. A safety pop-up (warning screen) appears on VesselView. Read and observe the safety pop-up.

Skyhook warning screen on VesselView

6. Press the X-button on VesselView to close the safety pop-up.

   NOTE: *Pressing the "SKYHOOK" button will also close the safety pop-up and then disengage Skyhook.*

7. The Skyhook system engages, and a one second solid horn beep sounds once. The trackpad "SKYHOOK" button light stops blinking and remains on indicating Skyhook is engaged.

   NOTE: *Some boat manufacturers include additional (secondary) systems of sounds, lights, or other sources to alert you and your passengers that Skyhook is engaged. See your boat manufacturer for information about additional Skyhook notification systems, if equipped.*

8. The VesselView "SKYHOOK" screen displays a green circle with the word "ON" when Skyhook engages. Refer to **The Skyhook Screen in VesselView**.

   NOTE: *The boat may reverse automatically if it passed the position it was asked to hold—where the "SKYHOOK" button was first pressed.*

9. When Skyhook is engaged you must remain at the helm and maintain a vigilant watch. Disengage Skyhook if anyone enters the water or approaches the boat from the water.
10. Press the "SKYHOOK" button a second time to put Precision Pilot in standby. All lights other than "STANDBY" turn off.
11. To disengage Skyhook, refer to **Disengaging (Deactivating) Skyhook**.

Disengaging (Deactivating) Skyhook

IMPORTANT: Both engines and drives must be operational for Skyhook to function. If the necessary reference signals from an engine or drive become unavailable, Skyhook automatically disengages.

1. To disengage the Skyhook, do one of the following:
   - Press the "SKYHOOK" button on the Precision Pilot trackpad.
   - Move any ERC lever out of neutral.
   - Move the joystick.

   NOTE: *In each method, the light on the Precision Pilot trackpad for the "SKYHOOK" button will turn off.*
2. A single horn beep sounds when the feature disengages.

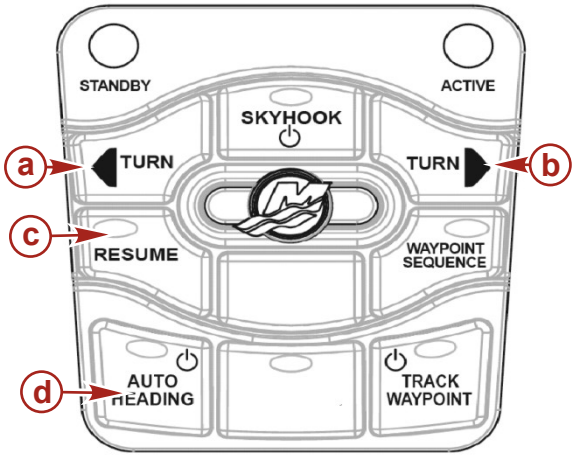
Auto Heading

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

Engaging Auto Heading

1. Place at least one running engine in forward gear.

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



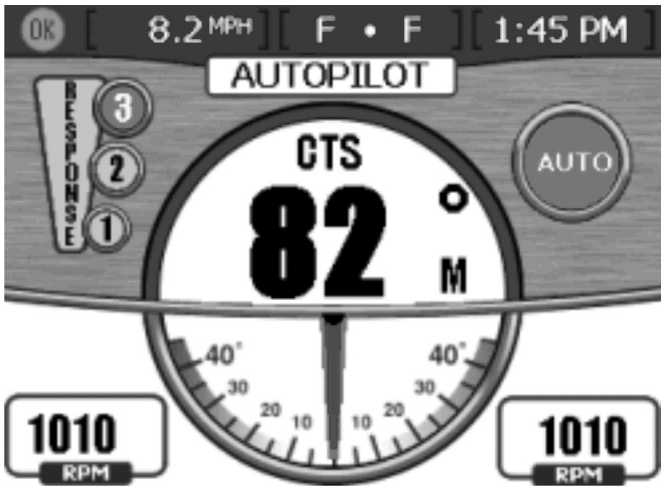
43579

a - Port "TURN" (course adjust) button
b - Starboard "TURN" (course adjust) button
c - "RESUME" button
d - "AUTO HEADING" button

4. Display the "AUTOPILOT" screen on VesselView. Refer to **Mode Display** in **VesselView**.
5. On the VesselView screen for autopilot, the mode indicator changes from "OFF" to "AUTO."
6. 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.*

7. Precision Pilot holds the compass heading the boat was following when the "AUTO HEADING" button was pressed and Auto Heading engaged.



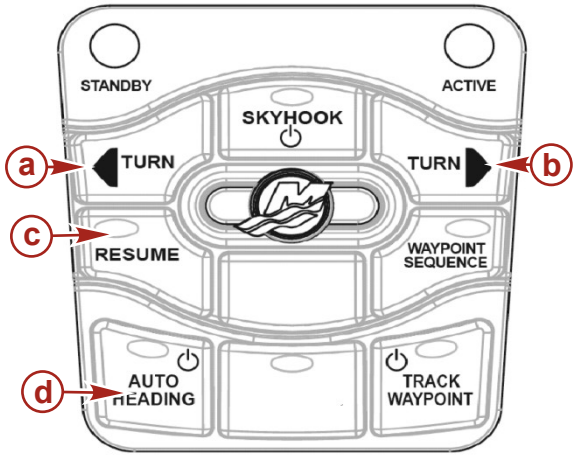
31409

8. To adjust your course while "AUTO HEADING" is engaged, refer to **Course Adjustment Using the Turn Buttons or Joystick.**
9. To disengage Auto Heading refer to **Disengaging Auto Heading**.
10. Press the "AUTO HEADING" button a second time, Auto Heading goes to the standby mode and all lights other than "STANDBY" turn off.

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. Tapping the joystick left or right adjusts your course for each tap.

1. Press the "TURN" button in the direction of the desired heading change. Each press of the button changes the desired heading by 10°.



43579

a - Port "TURN" (course adjust) button
b - Starboard "TURN" (course adjust) button
c - "RESUME" button
d - "AUTO HEADING" button

2. Deflect and hold the joystick in the desired direction 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 and a beep will sound for the movement to be recognized as input.

24707

Adjusting heading to starboard

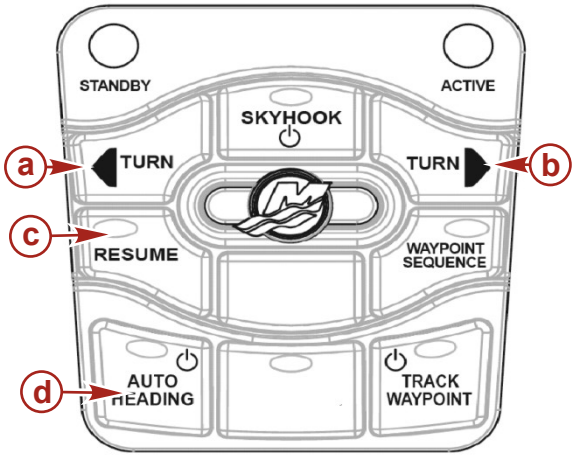
To Resume a Heading

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

IMPORTANT: The previous heading can only be resumed within one minute of the auto heading being disengaged or if the steering wheel 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.
- Pressed one of the "TURN" (course adjust) buttons with auto heading engaged.



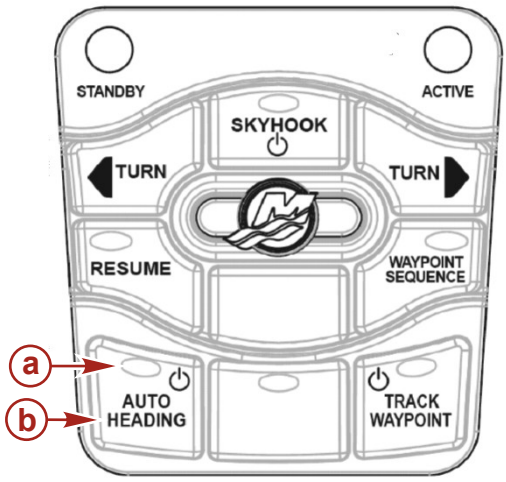
43579

a - Port "TURN" (course adjust) button
b - Starboard "TURN" (course adjust) button
c - "RESUME" button
d - "AUTO HEADING" button

Disengaging Auto Heading

1. Disengage the auto heading mode with any of the following actions:
   - Place the ERC handles for both engines in neutral. The "AUTO HEADING" button light turns off and the standby light comes on.
   - Turn the steering wheel beyond the electronic detent. The "AUTO HEADING" button light turns off and the resume light comes on.

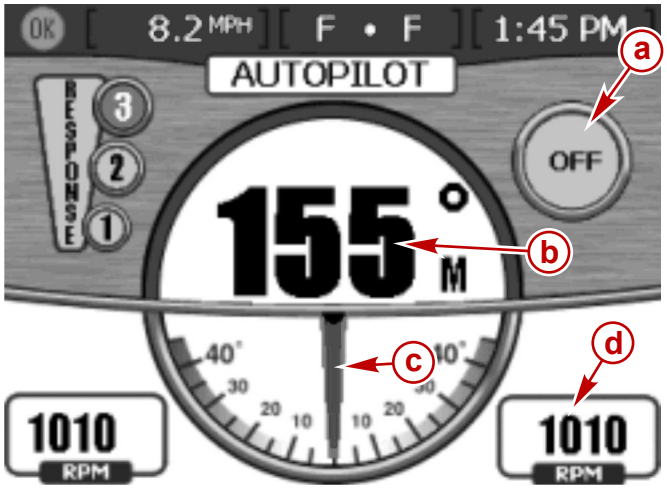
- Press the "AUTO HEADING" button on the Precision Pilot trackpad. The "AUTO HEADING" button light turns off and the standby light comes on.



43576

a - Button light
b - "AUTO HEADING" button

2. A single horn beep sounds and the mode indicator changes from "AUTO" to "OFF."
3. If Auto Heading disengaged because the steering wheel was turned, the resume button light turns on. While the resume button light is on, you can press the "RESUME" button 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 engage Standby and press it again to turn the Auto Heading mode off.



31408

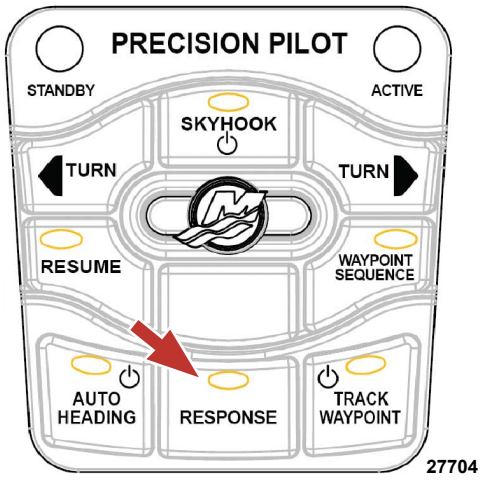
a - Mode indicator—"OFF" or "AUTO"
b - Current heading
c - Drive positions
d - Engine RPM

4. If the ERC handles were moved to neutral, the "AUTO HEADING" button light turns off and the "STANDBY" light comes on. You cannot resume your course by pressing the "RESUME" button. Refer to **To Resume a Heading**.
5. If Auto Heading disengaged because the "AUTO HEADING" button was pressed, the "AUTO HEADING" button light turns off and the "STANDBY" light comes on. Press the "AUTO HEADING" button a second time and the "STANDBY" light goes off, Auto Heading is disengaged, and the mode is "OFF."

Response Button

1. Press the "RESPONSE" button to increase or decrease how aggressively the vessel reacts to programmed changes when in the Pilot modes. How aggressively the vessel reacts equals a response setting in VesselView.

NOTE: Each time you press the "RESPONSE" button, the button light blinks to indicate you changed the response setting for that mode.



Response button

2. Press the "RESPONSE" button again to increase how aggressively the vessel reacts to programmed changes. The initial button press shows the current response setting. Pressing the button as many as three times will increase how aggressively the vessel reacts by three and then decrease it by returning to the first response setting.

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)

3. The value setting for the current amount of response appears on the Auto Heading page in VesselView.

Track Waypoint

⚠ WARNING

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

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.

When the Track Waypoint feature is activated and the boat is in operation:

- The helm must never be unattended. The feature is not designed to allow unattended operation of the vessel.
- The operator must remain at the helm at all times.
- It must not be used as the sole source of navigation.

IMPORTANT: Track Waypoint can only be used with chart plotters approved by Mercury Diesel.

Waypoint data needs to be provided to VesselView by a third party chart plotter. Refer to your chart plotter's user manual for details.

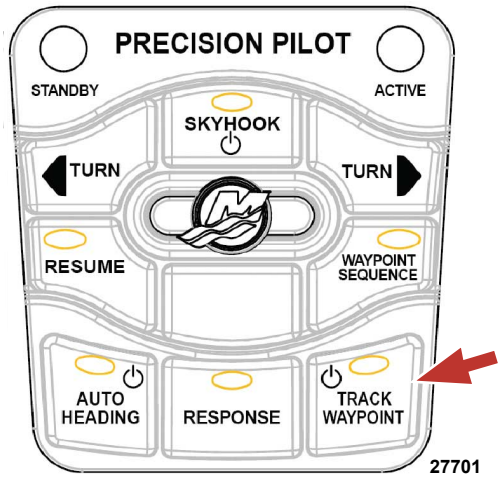
The accuracy of the feature can be affected by environmental conditions and incorrect use. Observe the following information when using the Track Waypoint and Waypoint Sequencing feature.

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 of Precision Pilot:

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



"TRACK WAYPOINT" button

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

   NOTE: *This display screen is activated during VesselView calibration. The GPS system generates the displayed heading based on magnetic North.*

Track Waypoint screen

NOTE: *Precision Pilot will not initiate turns when Track Waypoint mode is engaged. Turn features are only available in Auto Heading mode.*

Disengaging Track Waypoint Mode

1. Disengage the Track Waypoint mode by one of the following methods:

- Press the "TRACK WAYPOINT" button on the Precision Pilot keypad. The "TRACK WAYPOINT" button light goes off and Pilot goes to Standby. The "STANDBY" light turns on.
- Turn the steering wheel hard enough to overcome the force feedback and Pilot goes to Standby.
- Move both ERC levers back to neutral and Pilot goes to Standby.
- Press either "TURN" button and Pilot goes to Auto Heading mode.
- Press the "AUTO HEADING" button and Pilot goes to Auto Heading mode.
- Turn off the chart plotter and Pilot goes to Standby.

2. You can resume the Track Waypoint heading within one minute, if the vessel has not turned too far and the "RESUME" light is still on or flashing.

Turn Buttons or Joystick in Track Waypoint Mode

While in "TRACK WAYPOINT" mode, using the left or right "TURN" buttons on the keypad or using the joystick changes the mode to "AUTO HEADING."

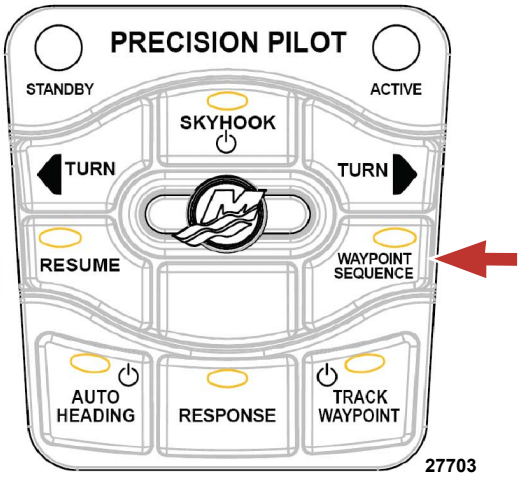
Auto Heading Button in Track Waypoint Mode

While in "TRACK WAYPOINT" mode, pressing the "AUTO HEADING" button causes Pilot to change to "AUTO HEADING" mode.

Acknowledging a Turn During a Waypoint Arrival

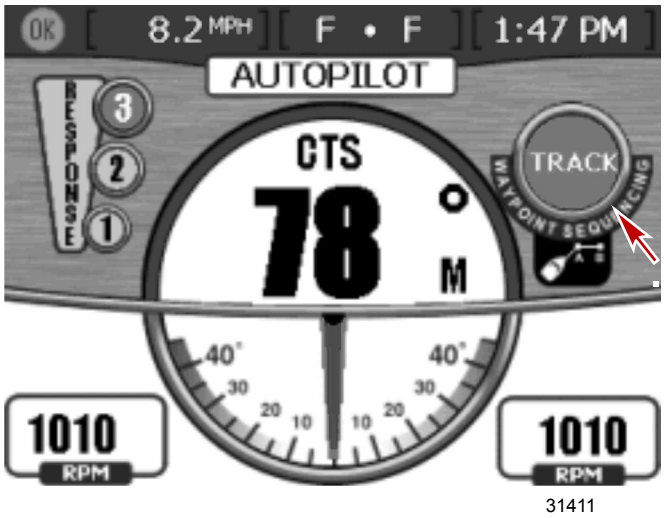
IMPORTANT: Track Waypoint mode does not automatically turn the boat upon arrival at a plotted waypoint.

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



"WAYPOINT SEQUENCE" button

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



31411

Waypoint Sequencing icon light

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

31414

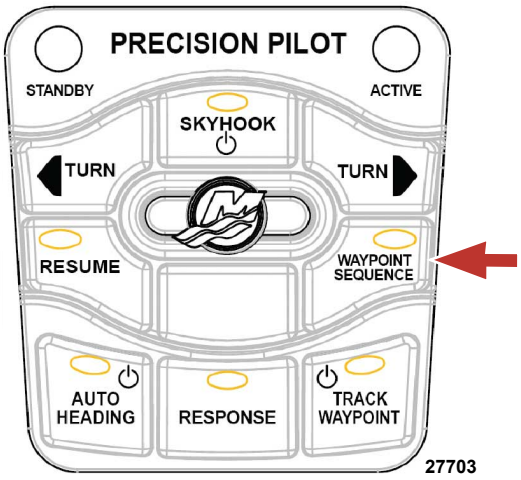
Pop-up screen warning

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

Waypoint Sequence

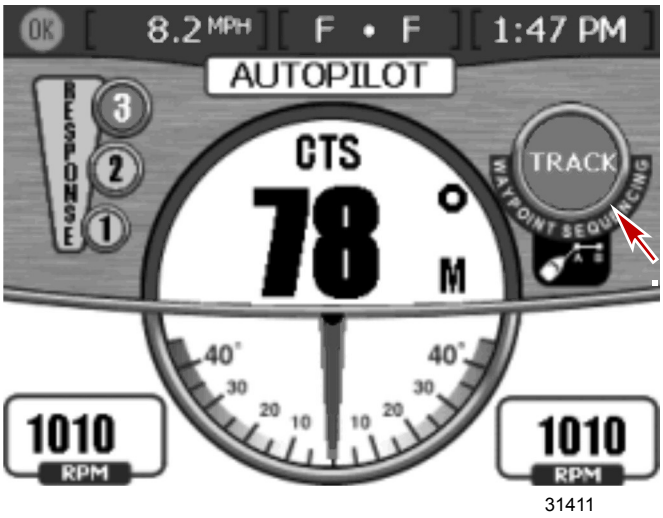
1. Place the ERC lever or levers into forward. "WAYPOINT SEQUENCE" does not engage if the levers are in neutral or reverse.
2. If the Track Waypoint button light is not on, press the "TRACK WAYPOINT" button.

3. Press the "WAYPOINT SEQUENCE" button to engage Waypoint Sequence mode.



"WAYPOINT SEQUENCE" mode button

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



Waypoint Sequence "TRACK" icon

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

⚠ WARNING

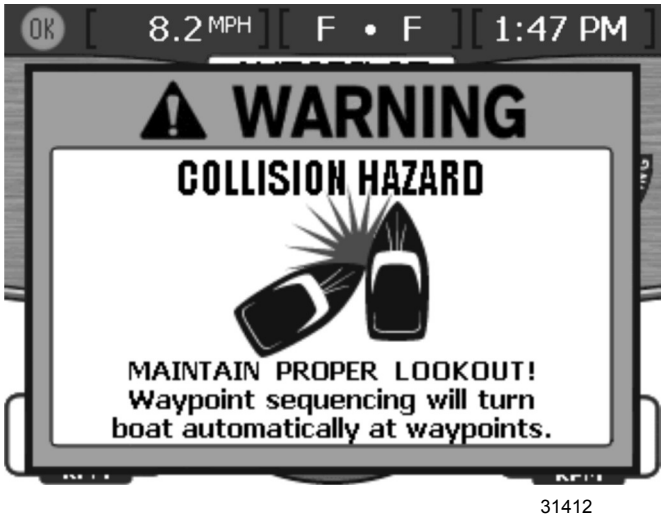
In some Precision Pilot modes—"Auto Heading," "Track Waypoint," and "Waypoint Sequence"—the boat navigates a preset course. The boat does not automatically respond to hazards such as other watercraft, obstacles, swimmers, or underwater terrain. Collision with these hazards could cause boat damage, serious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

6. Press the enter button to acknowledge that it is OK to turn. The enter button is in the upper right corner of VesselView and has a check mark symbol. Once acknowledged, Pilot tracks to the next waypoint in the route.

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

Waypoint acknowledge screen

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



Pop-up screen warning

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

Contingent Operations

Steering—Emergency Alternative Method

If the electronic steering wheel ceases to operate, the engine throttle handles (ERC handles), trim tabs, and the vessel joystick should still operate. Engine throttles and trim tabs can be used as an emergency alternative for steering in open water where there are no objects or other vessels in close vicinity.

To maintain steering and course heading, closely observe the amount of engine speed used with each throttle handle. Trim tabs can be adjusted to assist in steering the vessel. An operator should regularly practice steering the vessel in this manner to be familiar with using their vessel's throttles and trim tabs for steering.

The joystick can be used as an alternative method of steering when operating the vessel in close vicinity of objects, docks, and other vessels. Engine RPM is limited with joystick operation.

Port Engine Only Operation

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

However, if only the port side is operational, or only the port key switch is in the on position, the steering wheel will not have end stops provided by the force feedback system. In this case, the drive will always turn in the direction that the steering wheel is being rotated until the mechanical limits of the drive are reached. If there is damage to the port electrical system, the steering wheel will operate normally with complete force feedback and end stops.

The boat can operate as a single-engine vessel. Note that joystick and station keeping are not available in this condition. However, Zeus features redundant AutoPilot systems, so Auto Heading and Track Waypoint mode are still available during single-engine operation.

Gear Engagement—Emergency Procedure

If a transmission or electrical system is damaged or has experienced a condition resulting in a fault such that a transmission does not respond to the helm controls, it is possible to manually engage a gear. In an emergency you can manually place a transmission into gear by using a suitable wrench to actuate the appropriate gear shifting solenoid.

Note the following:

- It is better to use one drive that works properly than locking and operating the drive that is not functioning properly. This procedure is for when both drives are not responding to helm control.
- Auto Heading and Track Waypoint will work when emergency gear engagement is in use.
- Moving the ERC handle into reverse stops the engine.

⚠ CAUTION

Locking the transmission in gear using the emergency procedure renders the helm's shifting control inoperable. Drive carefully with the gear lock engaged. To shift out of gear, turn the key switch to "OFF."

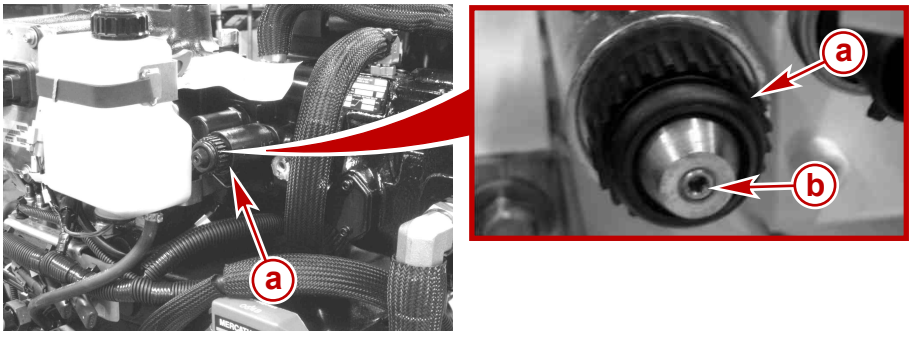
1. Determine the transmission that is not engaging a gear.
2. Stop the engines and remove the key from the key switch.

⚠ WARNING

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

3. Remove the drive cover of the affected transmission. Refer to your owner's manual.
4. Locate the forward gear solenoid on the port side of the affected transmission (the wire is tagged "Forward Gear").

   NOTE: *Do not disturb the reverse gear solenoid on the starboard side of the transmission (the wire is tagged "Reverse Gear").*
5. Using a 3 mm hex-head wrench, turn the solenoid screw in the center of the top of the forward gear solenoid clockwise until it stops.
6. The transmission is now manually engaged in the gear and will not respond to the helm controls for shifting in and out of that gear.



41213

a - Forward gear solenoid
b - Solenoid screw

⚠ 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.

7. Ensure that the area around the propellers is clear before starting the engine since the propeller will be turning whenever the engine is operating.
   IMPORTANT: The engine does not start with the ERC lever in gear, even though the drive is manually engaged in a gear.
8. When you are ready to start the engine, position the ERC lever in neutral gear before turning the key switch to the start position.
   NOTE: *Due to the extra load of turning the drive gears and propeller, the starter may turn slower when starting the engine connected to the drive in the emergency setting.*
9. Use extra care and caution when operating your boat in this emergency mode. On the drive with the manually engaged gear, you must turn that engine off to stop the propeller from turning or providing thrust.
   NOTE: *Putting the drive with the gear manually engaged into reverse stops the engine.*
10. Immediately take your boat to a Mercury Diesel authorized repair facility and inform them that the drive gear has been manually engaged.

Steering and Trim—Manual Override

The steering and trim system operate using a hydraulic manifold fitted with control valves. If a malfunction occurs in the manifold for the steering and trim system, VesselView should display a fault code. The steering actuator, trim cylinder, or both may not respond to helm control resulting in the loss of normal steering or trim control.

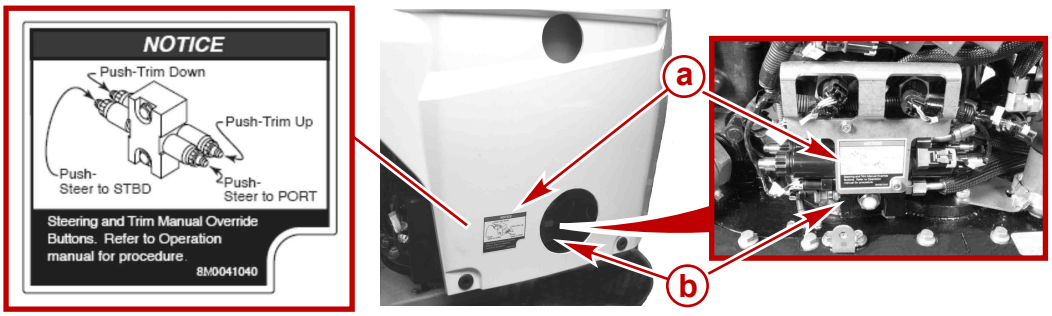
⚠ CAUTION

A fault in the steering control valve or trim control valve will temporarily cause a malfunction of the steering or trim helm controls on the affected drive. If you lose normal steering or trim control, reduce speed to operate the boat safely.

The table provides a matrix of related drive and trim tab information in the event of a malfunction or failure.

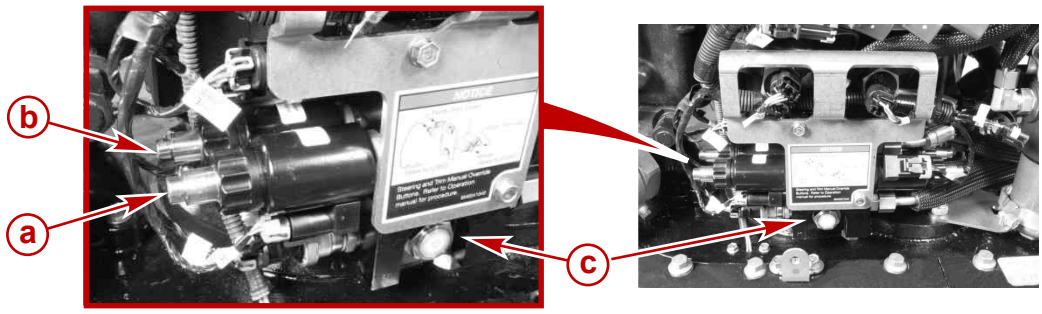
Failure Mode	Fault Codes	Drive or Tab Position	Engine Management	Boat Speed
Steering control valve stuck	Steering_Spool_Stuck_Fault	Stuck in any position	• Fault code is seen on VesselView • Drive is in reduced operation mode • Engine throttle percentage is reduced	The maximum boat speed that can be achieved on a single engine, with one engine shut down, or with one drive that is not steerable, will vary on different models. Except in an emergency, normal operation on a single engine should not exceed 50% throttle.
Trim tab control valve stuck	Tab_Spool_Stuck_Fault	Stuck in any position	No effect on engine management	Proceed at a reduced safe operating speed within the duty cycle.

In an emergency, if a steering or trim control valve is stuck, it may be possible to clear the steering fault code by manually overriding the system. A decal with information about the location of specific control valves is affixed to the drive cover (if equipped) and on the bracket attached to the steering manifold on all models. Refer to the **Procedure for a Stuck Steering Control Valve** or the **Procedure for a Stuck Trim Tab Control Valve** for additional information.



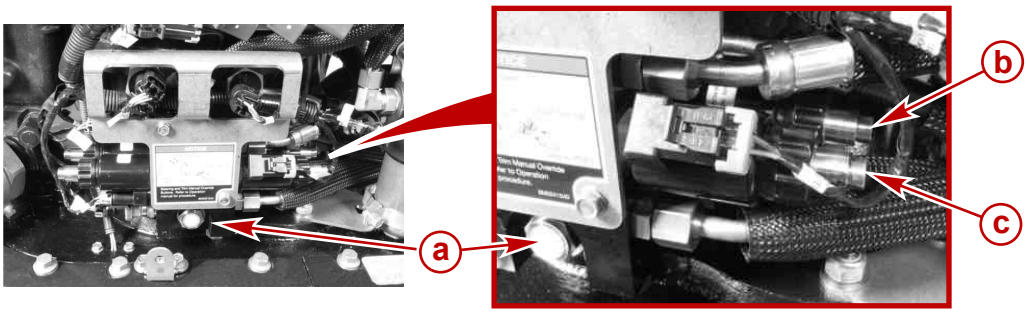
41303

a - Decal
b - Hydraulic manifold for steering and trim



41307

Manual-override buttons on front of manifold
a - Steer-to-starboard override button
b - Trim-down override button
c - Hydraulic manifold



41309

Manual-override buttons on rear of manifold
a - Hydraulic manifold
b - Trim-up override button
c - Steer-to-port override button

⚠ WARNING

Accidental engine starting can cause serious injury or death. Remove the key from the ignition switch and engage the lanyard stop or E-stop switch to prevent the engine from starting when performing service or maintenance on the power package.

Procedure for a Stuck Steering Control Valve

1. Determine the drive that is not responding to steering control.
2. Shut down the engine and turn the key switch off. Wait at least 30 seconds, if possible.
3. Restart the engine. Confirm the steering fault has cleared.
4. If the steering fault did not clear, repeat the start/stop routine up to three times.
5. If the steering fault does not clear using the above procedure, then shift the transmission into neutral, shut down the engine, turn the key switch off, and alternately push the port and starboard steering manual-override buttons to release the spool. Refer to the decal on the manifold bracket or on the port-side of the drive cover, if equipped, for additional information.
6. Restart the engine. At the helm, steer the drive to the port and starboard to confirm the fault has cleared. If the Steering_Spool_Stuck fault remains, then shut down the engine and turn the key switch off on the unresponsive drive. Operate on another engine and drive. Refer to **Port Engine Only Operation**, if the starboard drive is shut down.

   NOTE: *Boat speed and maneuverability will be reduced.*

Procedure for a Stuck Trim Tab Control Valve

1. Determine the drive that is not responding to trim control.
2. Shut down the engine and turn the key switch off. Wait at least 30 seconds, if possible.
3. Restart the engine. Confirm the trim tab fault has cleared.
4. If the trim tab fault did not clear, repeat the start/stop routine up to three times.
5. If the trim tab fault does not clear using the above procedure, then shift the transmission into neutral, shut down the engine, turn the key switch off, and alternately push the trim-up and trim-down manual-override buttons to release the spool. Refer to the decal on the manifold bracket or on the port-side of the drive cover, if equipped, for additional information.
6. Restart the engine. At the helm, trim the tab up and down to confirm the fault has cleared. If the Tab_Spool_Stuck fault remains, then shut down the engine and turn the key switch off on the unresponsive drive. Operate on another engine and drive. Refer to **Port Engine Only Operation**, if the starboard drive is shut down.

   NOTE: *Boat speed and maneuverability will be reduced. Oversteer or boat listing may occur with tab in the down position.*

End of First Season Checkup

At the end of the first season of operation, contact an authorized repair facility to discuss or perform scheduled maintenance items. If you are in an area where the product is operated continuously, year-round, you should contact your dealer at the end of the first 100 hours of operation or once yearly, whichever occurs first.

Notes:

Section 4 - Specifications

Table of Contents

4

Drive Gear Lubricant

Model	Fluid Capacity (includes the drive and the gear lube monitor)	Fluid Type	Fluid Part Number
Zeus (during break-in)	5-1/4 L (5-1/2 US qt)	Premium Gear Lubricant	92-858058K01
Zeus (after break-in)	5-1/4 L (5-1/2 US qt)	High Performance Gear Lube	92-858064K01

Transmission

IMPORTANT: Always use the dipstick to determine the exact quantity of lubricant (fluid) required.

Transmission Without Drop Box

Description	Fluid Capacity	Fluid Type	Fluid Part Number
Transmission only (without drop box)	4 L (4-1/4 US qt)	Synthetic Power Steering Fluid SAE 0W-30	92-858077K01

Transmission With Drop Box

Description	Fluid Capacity	Fluid Type	Fluid Part Number
Transmission and drop box	5-1/4 L (5-1/2 US qt)	Synthetic Power Steering Fluid SAE 0W-30	92-858077K01

Transmission With Drop Box and Remote (Engine Mounted) Transmission Oil Cooler

Description	Fluid Capacity	Fluid Type	Fluid Part Number
Transmission, drop box and remote (engine mounted) oil cooler	5-1/2 L (6 US qt)	Synthetic Power Steering Fluid SAE 0W-30	92-858077K01

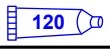
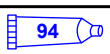
Steering Actuator and Trim Oil

Description	Fluid Capacity	Fluid Type	Fluid Part Number
Steering actuator and trim system	5-3/4–6 L (6–6-1/3 US qt)	Synthetic Power Steering Fluid SAE 0W-30	92-858076K01, 1/4 L (8 oz) 92-858077K01, 1 L (1 US qt)

Approved Paints

Description	Part Number
Marine Cloud White	8M0071082
Mercury Light Gray Primer	92-80287852
Mercury Phantom Black	92-802878Q1

Approved Lubricants

Tube Ref No.	Description	Where Used	Part No.
	Corrosion Guard	Drive exterior surfaces	92-802878 55
	U-joint and Gimbal Bearing Grease	Driveshaft slip-joint	8M0071842
	Anti-Corrosion Grease	Propeller shafts	Obtain Locally

Section 5 - Maintenance

Table of Contents

Product Responsibilities

Owner and Operator Responsibilities

It is the operator's responsibility to perform all safety checks, to ensure that all lubrication and maintenance instructions are complied with for safe operation, and to return the unit to a Mercury Diesel authorized repair facility for a periodic checkup.

Normal maintenance service and replacement parts are the responsibility of the owner or operator and, as such, are not considered defects in workmanship or material within the terms of the warranty. Individual operating habits and usage contribute to the need for maintenance service.

Proper maintenance and care of your power package will ensure optimum performance and dependability and will keep your overall operating expenses at a minimum. See your Mercury Diesel authorized repair facility for service aids.

Dealer Responsibilities

In general, a dealer's responsibilities to the customer include predelivery inspection and preparation such as:

- Make certain that the power package and other equipment are in proper operating condition before delivery.
- Make all necessary adjustments for maximum efficiency.
- Explain and demonstrate the operation of the power package and boat.
- Provide you with a copy of a Predelivery Inspection Checklist.
- Fill out the Warranty Registration Card completely and mail it to the factory immediately upon sale of the new product. All power packages must be registered for warranty purposes.

Do-It-Yourself Maintenance Suggestions

Mercury power packages are highly technical, complex pieces of machinery. Only qualified personnel using the proper tools should attempt major repair.

- Your safety is our concern. Always read and understand the Cautions, Warnings, Important Notices, and Notes.
- Do not attempt repairs unless specifically trained in that procedure.
- Reference the correct service manual for the product. Do not attempt repairs unless qualified.
- Special tools and equipment are required to perform certain repairs. Failure to use the correct special tools and equipment can result in severe damage to the product.
- Always have a Mercury Diesel authorized repair facility service your power package and do periodic maintenance inspections to help provide safe and trouble-free boating.

General Inspection of Power Package

Inspect your power package at regular intervals to help maintain top operating performance and avoid potential problems before they occur. Check the entire power package carefully, including all accessible engine and drive parts. For engine inspection information, refer to the appropriate manual.

1. Check for loose, damaged, or missing parts, hoses, and clamps. Tighten or replace as necessary.
2. Check electrical connections and leads for damage.
3. Remove and inspect the propellers. If nicked, bent, or cracked, contact your Mecury Diesel authorized repair facility.
4. Repair nicks and corrosion damage on the power package exterior finish. Contact your Mecury Diesel authorized repair facility.

While inspecting the power package and drive, certain components can be damaged by the weight of an individual and must not be used as a step. Decals on top of the drive components indicate where no step is allowed. Do not step on components with a decal.

37802

Decal placed where no step is allowed

The Zeus drive cover protects and separates some components after the drive is installed. The drive cover provides added protection against damage to the hoses and other components as a result of mechanical hose abrasion during operation or damage to the hoses, such as being stepped on during service or maintenance. Keep the drive cover installed except when removed for service.

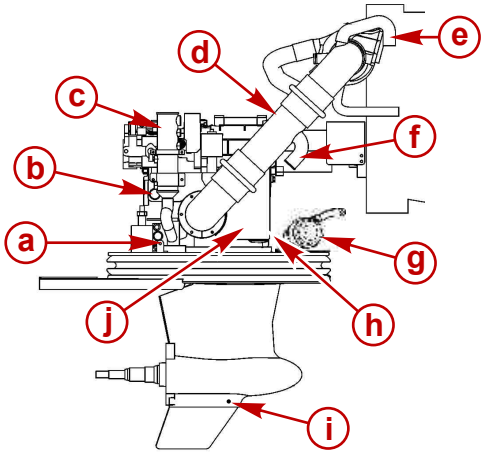
41456

Typical drive cover

For information on removing the drive cover, refer to **Drive Cover, If Equipped**.

Drive Service Point Locations

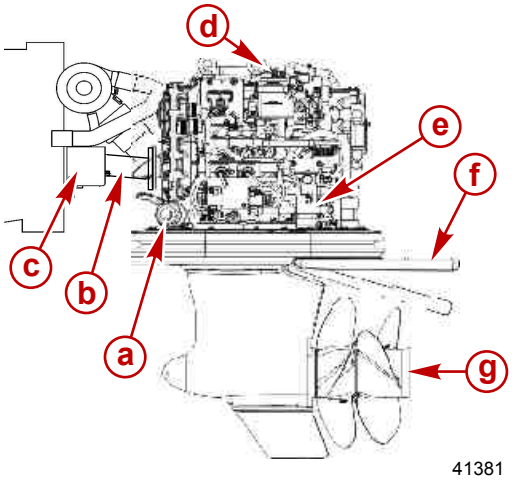
Starboard



41394

- **a -** Seawater return (discharge) valve (if equipped)
- **b -** Transmission fluid drain plug
- **c -** Hydraulic oil cooler
- **d -** Exhaust outlet connection
- **e -** Engine seawater return outlet
- **f -** Muffler seawater bypass
- **g -** Seawater inlet seacock
- **h -** Hydraulic oil drain plug
- **i -** Gearcase drain plug
- **j -** Hydraulic oil reservoir

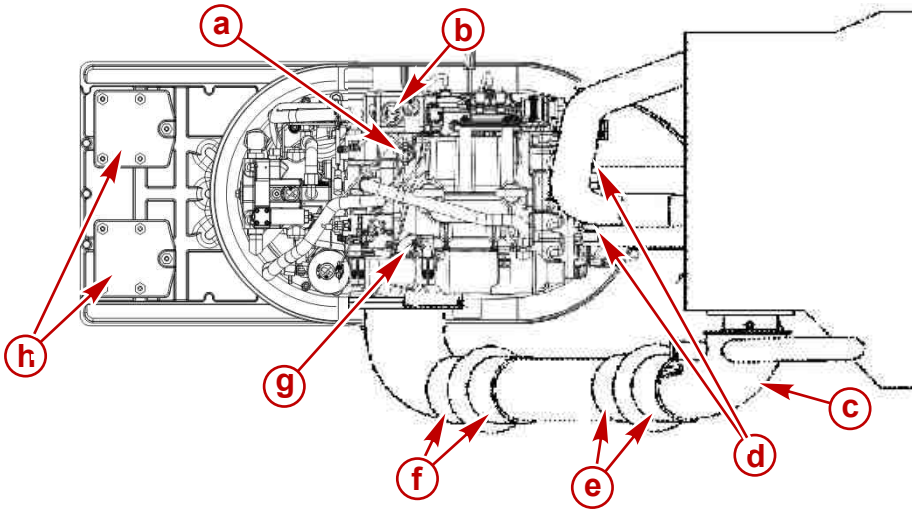
Port



41381

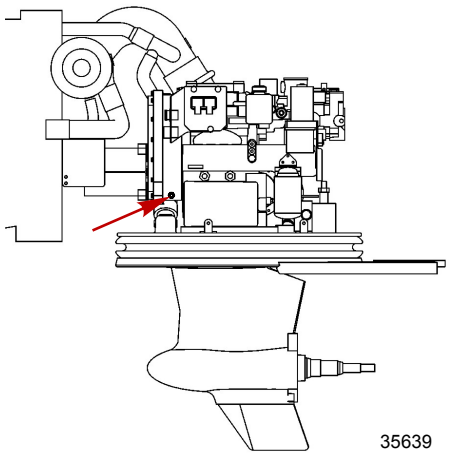
- **a -** Seawater inlet seacock (if drive mounted)
- **b -** Driveshaft (under shield, if equipped)
- **c -** Driveshaft shield
- **d -** Gear lube monitor fill
- **e -** Hydraulic fluid filter
- **f -** Trim tab and anode plates
- **g -** Propeller shaft

Top



- **a -** Transmission dipstick
- **b -** Gear lube monitor fill cap
- **c -** Exhaust elbow
- **d -** Driveshaft shield screws
- **e -** Upper exhaust clamps
- **f -** Lower exhaust clamps
- **g -** Transmission filter
- **h -** Anodes

Drop Box



Drain plug or cap

Maintenance Schedules

Application

The following schedules apply to the Zeus drive and driveshaft connection, not to the engine. For the engine maintenance schedule and procedures, refer to the **Operation and Maintenance Manual** available from the manufacturer of the engine.

NOTE: *In the maintenance lists, the word check means to visually inspect and then accordingly, correct, replace, or repair the task item.*

Routine Maintenance

Task Interval	Maintenance to be Performed
Each day start and when refueling	• Check the steering actuator and trim tab oil (fluid) level. • Check the gear lube level in the gear lube monitor. • Check the transmission oil (fluid) level.

Task Interval	Maintenance to be Performed
Every two months of operation	• Check the battery connections and fluid level. • Treat the power package components inside the boat with Corrosion Guard to protect the product from corrosion. • Ensure that the gauges and the wiring connections are secure. Clean the gauges (every two months or every 50 hours, whichever occurs first. If operating in saltwater, the interval is reduced to every 25 hours or 30 days, whichever occurs first).

Scheduled Maintenance

IMPORTANT: The drive gearcase and gear lube monitor in the vessel have been filled with break-in gear lube. Break-in gear lube must be changed after 25 hours and not to exceed 30 hours of operation to prevent premature gear wear. The color of break-in gear lube is brown.

Drain the drive and gear lube monitor of the break-in gear lube and fill with the specified gear lubricant. Refer to Drive Gear Lube.

Task Interval	Maintenance to be Performed
After the first 25 hours of operation and not to exceed 30 hours of operation	• Change the transmission oil (fluid) and filter, including the transmission oil in the drop box, if equipped. • Change the gear lube in the drive gearcase and gear lube monitor. (The task can be performed with the vessel in the water.)
Every 250 hours of operation or once a year (whichever occurs first)	• Tighten the driveshaft connecting bolts and nuts to specification. • Inspect and lubricate the driveshaft slip-joint. • Inspect the driveshaft U-joints; lubricate if equipped with grease fittings. • Change the gear lube in the drive gearcase and gear lube monitor. • Change the transmission oil (fluid) and filter, including the transmission oil in the drop box, if equipped.
Every 500 hours of operation or once a year (whichever occurs first)	• Lubricate the propeller shaft splines and tighten the propeller nuts to specification. • Inspect the hydraulic system fittings and hoses found on the drive for leaks or damage. Check the hose fittings for tightness. • Check the bonding (continuity) circuit for loose or damaged connections. Test the MerCathode® unit output. • Inspect the electrical system for loose, damaged, or corroded fasteners. Check for loose, damaged, or corroded wiring and connectors. • Inspect the cooling system components found on the drive for damage or leaks. Check the hose clamps on the hoses for tightness. • Check that the water inlet openings on the seawater pickup are clean and not obstructed. • Inspect the exhaust system connections on the drive for damage or leaks. Check the hose clamps on the hoses for tightness. • Treat the power package components inside the boat with Corrosion Guard to protect the product from corrosion.
Every 1000 hours of operation or two years (whichever occurs first)	• Replace the driveshaft U-joints.
Whenever the VesselView fault code "Filter Dirty Fault" or "Filter Clog Fault" is displayed	• Change the hydraulic oil and filter for the steering and trim system. (Refer to the information about Changing the steering actuator and trim hydraulic oil.)

Zeus Pod Sacrificial Anode Inspection

IMPORTANT: Sacrificial anodes are made of specific types of metals or alloys. Aluminum anodes are meant to corrode and sacrifice themselves in order to protect the aluminum section of the power package that is in the water. The sacrificial anodes on a Zeus pod drive must be inspected periodically.

In most applications, the sacrificial anodes on the pod drive trim tab are difficult to inspect while the vessel is in the water and may not be visible until the vessel is removed from the water.

Water conditions where the vessel is moored, may cause the anodes to erode quickly, decreasing the corrosion protection for the pod drive. An increase in water velocity through currents or tides increases the corrosion rate of metals. This is because flowing water puts more water in contact with the metal and therefore, more oxygen in contact with the metal as well.

Mercury Marine recommends a visual inspection of the pod drive anodes every 30 days, more often if the vessel is moored in swift currents or tides. This inspection schedule may not be practical in certain situations. You should consult the local authorized Mercury Marine repair facility for options on inspecting the anodes of the pod drive.

Maintenance Log

Record all maintenance performed on your power package here. Be sure to save all work orders and receipts.

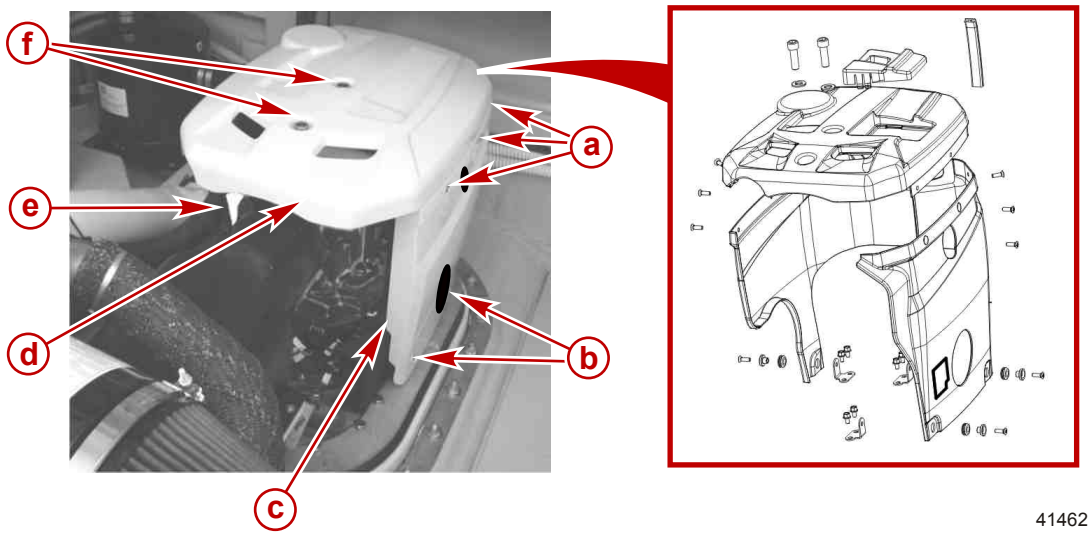
Date	Maintenance Performed	Engine Hours

Drive Cover, If Equipped

Removing the Drive Cover

NOTE: *The top of the drive cover contains an access panel which provides access to the fill cap on the gear lube monitor and the transmission fluid dipstick without removing the entire cover.*

1. Remove the three upper screws (port and starboard) holding the side cover to the top cover.
2. Remove the two lower screws holding the port side cover to the center section.
3. Remove the one lower screw holding the starboard side cover to the center section.
4. Remove the two side covers
5. Remove the two top screws.
6. Lift and remove the top of the drive cover.



41462

Typical drive cover

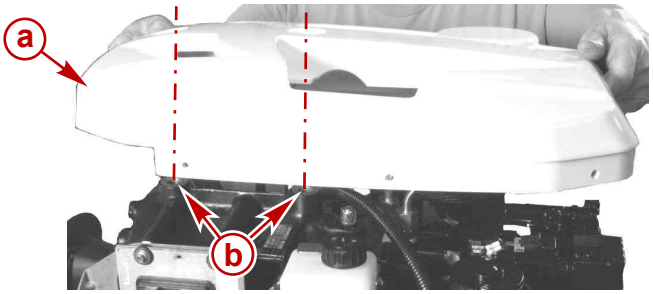
- **a -** Upper screw (6)
- **b -** Lower screw (3)
- **c -** Port side cover
- **d -** Top of the drive cover
- **e -** Starboard side cover
- **f -** Top screw (2)

Cleaning and Inspecting the Drive Cover

1. Clean and wax the cover assembly often using marine cleaners and waxes.
2. Inspect the individual cover parts for cracks or damage; replace if cracked or damaged.

Installing the Drive Cover

1. Carefully install the top cover on the drive. Align the cover with the two threaded holes in the transmission where the lifting rings were removed.

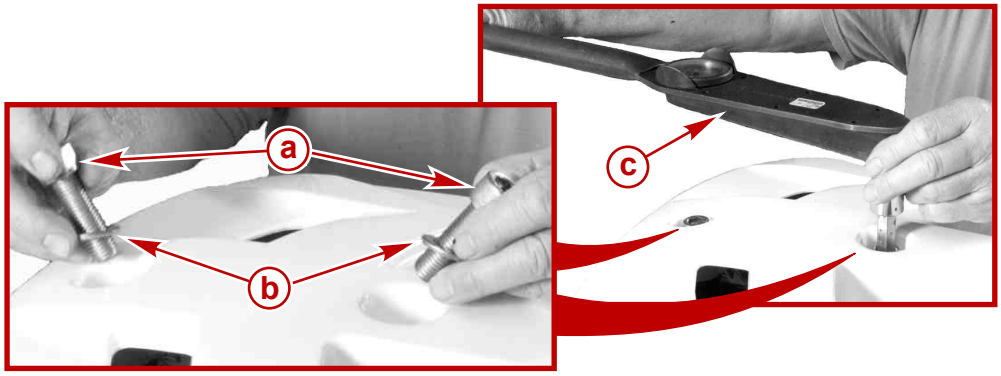


39497

- **a -** Top cover
- **b -** Threaded holes

2. Install one large washer on each of the top cover screws.

3. Install the two screws. Tighten the screws to specification.

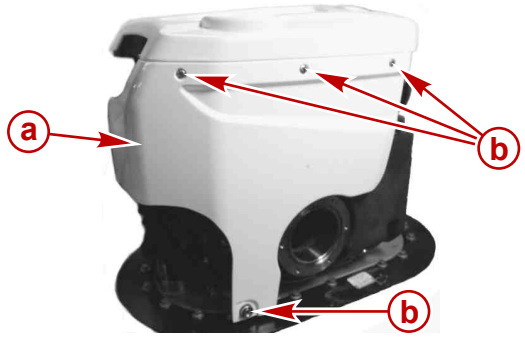


39498

a - Top cover screw
b - Washer
c - Torque wrench

Description	Nm	lb-in.	lb-ft
Top cover screw	61	–	45

4. Install the starboard side cover using four screws.

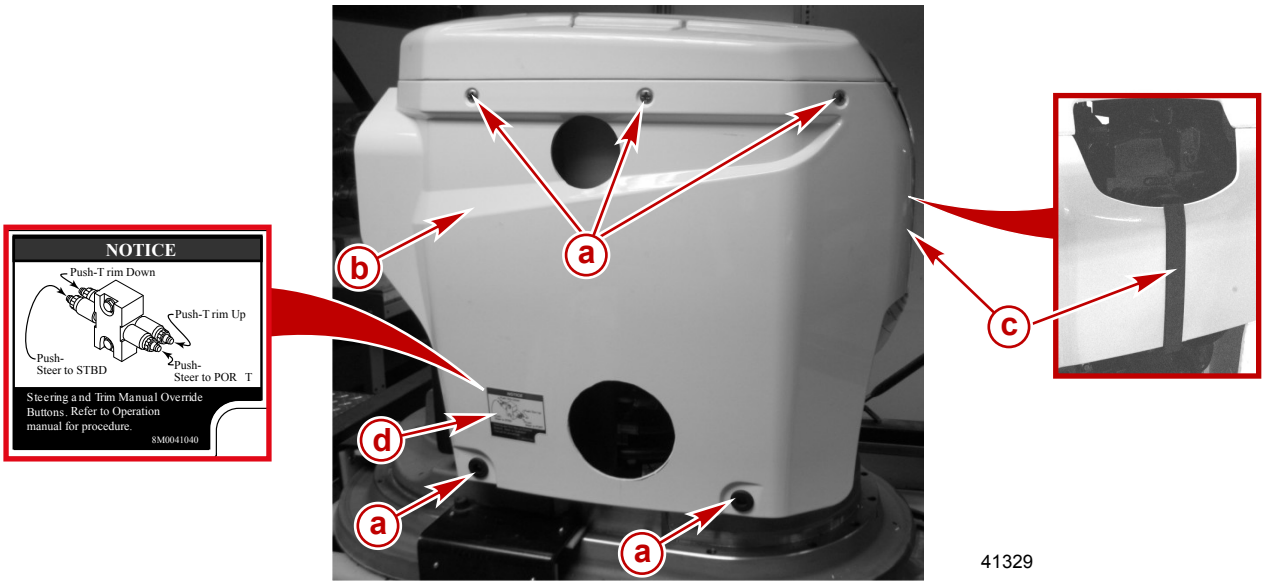


39590

a - Starboard cover
b - Screw (4)

5. Align and insert the starboard cover into the groove of the H-trim section on the port cover.

6. Install the port side cover using five screws.



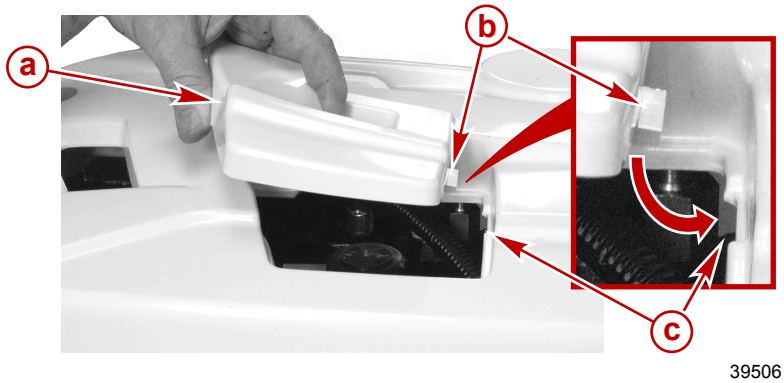
Typical port side cover

a - Screw (5)
b - Port cover
c - H-trim
d - Information decal

7. Tighten the three lower and six upper cover screws to specification.

Description	Nm	lb-in.	lb-ft
Cover upper screws	10	89	–
Cover lower screws	27	–	20

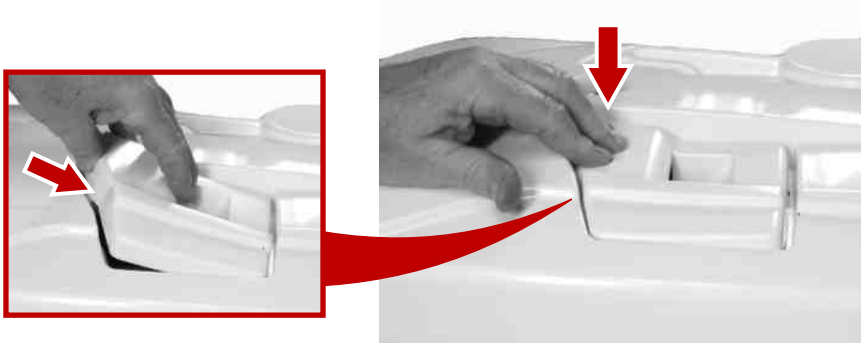
8. Install the access cover.
   a. Insert the molded clip on the aft end of the access cover under the indented edge of the cover top.



a - Access cover
b - Molded clip
c - Indented edge

   b. Align the access cover with the opening in the top cover.

c. Press down evenly on the front end of the access cover. The access cover snaps into its installed position.



39514

Completing the access cover installation

Drive Gear Lube

Drive Gear Lubrication

NOTICE
Discharge of oil, coolant, or other engine/drive fluids into the environment is restricted by law. Use caution not to spill oil, coolant, or other fluids into the environment when using or servicing your boat. Be aware of the local restrictions governing the disposal or recycling of waste, and contain and dispose of fluids as required.

The drive gear lubrication system includes a translucent white-plastic bottle that is used to monitor the level of the drive gear lubricant (lube). The monitor includes a switch that can detect a low level of gear lubricant and set an audio or visual alarm.

The **Checking** and **Filling** procedures as provided are for situations where the gear lubricant level in the monitor is low but lubricant is visible. Filling the monitor to the specified level whenever lubricant is still visible in the monitor is correct.

In some events, such as a seal leaking, the gear lubricant level may have dropped low enough that no lubricant is visible in the monitor. In these situations the operator should have received an audible or visual alarm of a low gear lubricant level. If there has been an audible or visual alarm for low gear lubricant level and the monitor is found empty, filling the system through the gear lube monitor (when no lubricant is visible in the monitor) is not correct and requires additional steps as outlined in the **Event Summary** table.

IMPORTANT: If the gear lube monitor is empty, air may be trapped in the drive lubrication system by attempting to fill the monitor through the opening in the monitor. Trapped air may cause the lubricant level to appear correct in the monitor but still be low or insufficient in the system.

The steps for correct maintenance of the drive gear lubrication level can be summarized by the following table:

Event Summary Table

Event	Task
Low without an alarm	Fill the gear lube monitor to the specified level. Refer to **Filling**.
Low with an alarm, lubricant low but visible in monitor	
Monitor empty and with an alarm	Remove the drive side cover, if equipped. Pressure fill the drive unit through the steering actuator until the gear lube appears in the gear lube monitor at the "COLD FILL LEVEL" line. Refer to the appropriate steps in **Changing—With the Boat in the Water** and fill the drive through the steering actuator.

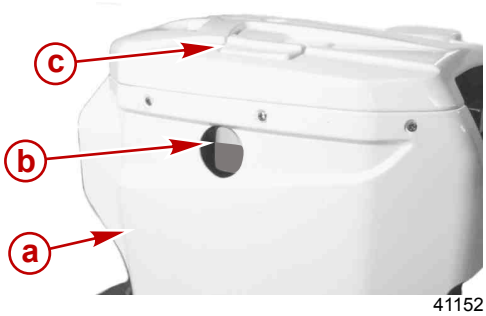
Checking

IMPORTANT: The gear lube level in the gear lube monitor rises and falls during drive operation; always check the gear lube level when the drive is cool and the engine is shut down.

NOTE: *It is normal to add a small amount of gear lube between change intervals.*

IMPORTANT: If the gear lube level is below the "COLD FILL LEVEL" line when checked (especially after the first couple of times the boat is operated for a long period) or if gear lube must be added frequently, there could be a lubricant loss, such as a seal leak. Leaks could result in a lack of lubrication that will damage the drive. Inspect the drive if lubricant loss occurs. Contact your Mercury Diesel authorized repair facility.

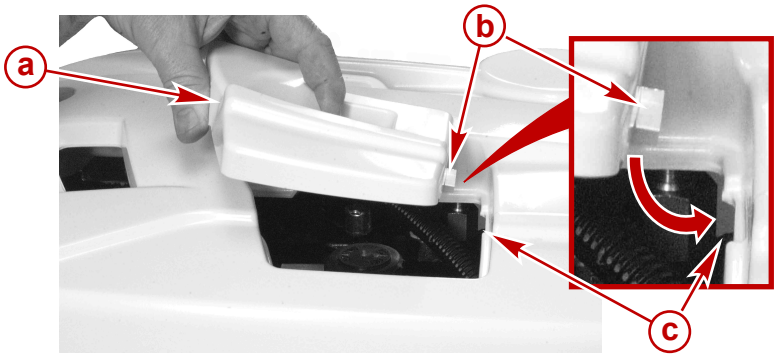
1. On models equipped with a drive cover:
   a. Inspect the gear lube level in the monitor.



41152

a - Port side cover
b - Gear lube monitor
c - Access cover

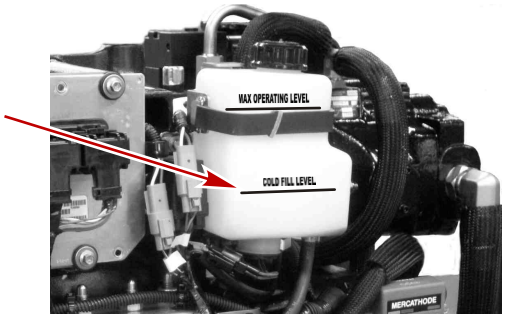
   b. If necessary, remove the access cover from the drive cover.



39506

a - Access cover
b - Molded clip
c - Indented edge

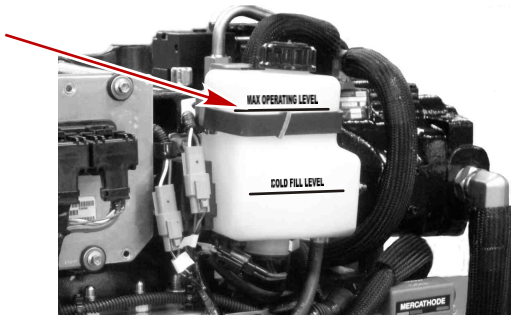
   c. Remove the cap from the gear lube monitor.
2. To check the drive gear lube with the optional drive cover removed, refer to **Removing the Drive Cover**.
3. Inspect the gear lube level in the gear lube monitor. The gear lube level should be between the "COLD FILL LEVEL" (cold full line) and the "MAX OPERATING LEVEL" (hot full line).



41471

"COLD FILL LEVEL" (cold full line)

NOTE: *After the drive has been operated and the gear lube is hot, the fluid expands and may be up to the "MAX OPERATING LEVEL" (hot full line).*



41467

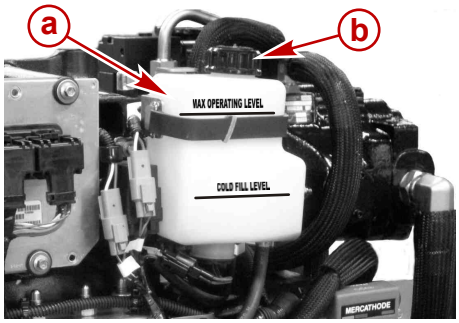
"MAX OPERATING LEVEL" (hot full line)

IMPORTANT: If any water is visible at the bottom of the gear lube monitor or if the gear lube appears discolored, contact your Mercury Diesel authorized repair facility immediately. These conditions may indicate a water leak in the drive.

4. If the level is lower than the "COLD FILL LEVEL" (cold full line), refer to **Filling**.

   NOTE: *Premium Gear Lubricant used during the break-in period is brown in color and must be changed after the 25 hour break-in. The color of High Performance Gear Lube, used after break-in, is blue. Do not mix the gear lubricants.*

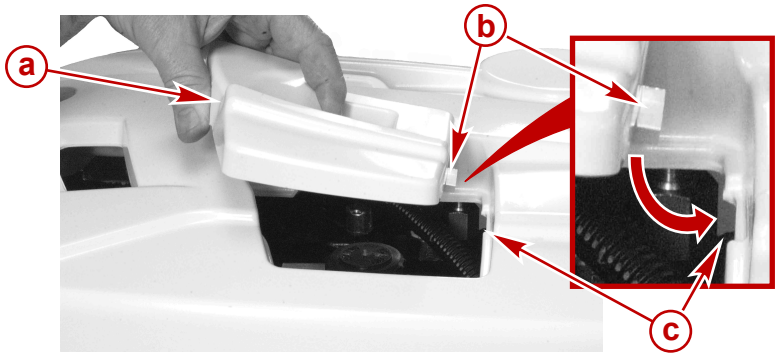
5. If the cap was removed, ensure that the gasket for the gear lube monitor cap is properly positioned and install the cap. Do not overtighten.



41465

a - Gear lube monitor
b - Cap

6. Install the drive cover if removed. Refer to **Installing the Drive Cover**.
7. If your model is equipped with a drive cover, install the access cover.
   a. Insert the molded clip on the aft end of the access cover under the indented edge of the cover.

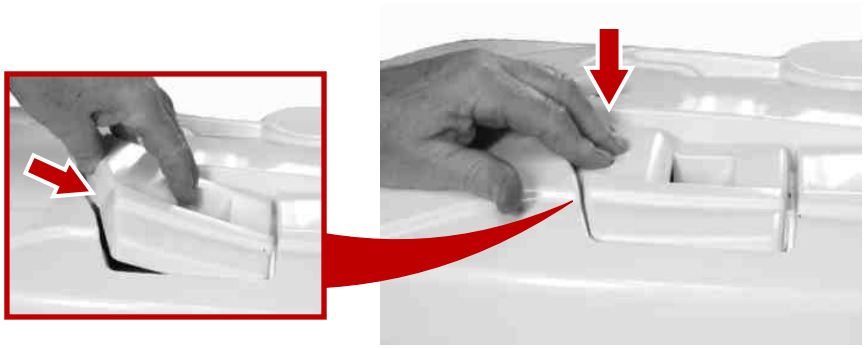


39506

a - Access cover
b - Molded clip
c - Indented edge

   b. Align the access cover with the opening in the top cover.

c. Press down evenly on the front of the access cover. A click-sound can be heard when the access cover snaps into final position.



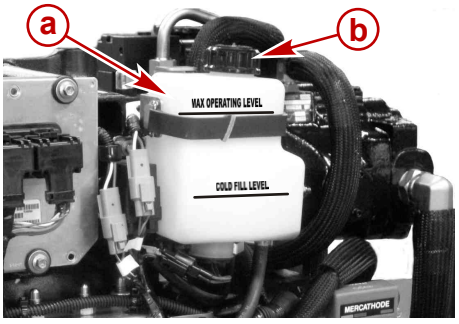
39514

Completing the access cover installation

Filling

If the gear lube level is below the "COLD FILL LEVEL" line, add the specified gear lube.

1. Remove the cap from the gear lube monitor.



41465

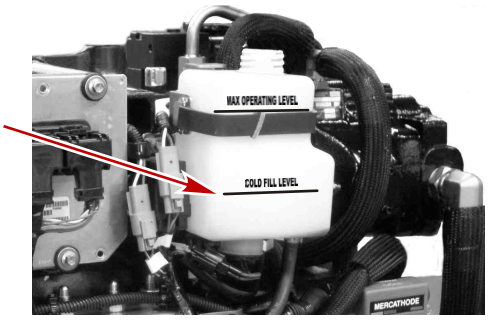
Shown without drive cover

a - Gear lube monitor

b - Cap

NOTE: *Premium Gear Lubricant used during the break-in period is brown in color and must be changed after the 25 hour break-in. The color of High Performance Gear Lube, used after break-in, is blue. Do not mix the gear lubricants.*

2. Fill the gear lube monitor with the specified gear lube so that the gear lube is level with the "COLD FILL LEVEL" line (cold full line). Do not overfill.



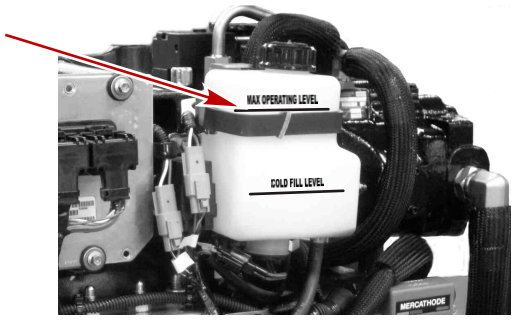
41468

"COLD FILL LEVEL" line (cold full line)

Tube Ref No.	Description	Where Used	Part No.
82	Premium Gear Lubricant	Gear housing and gear lube monitor during break-in (the first 25 hours but not to exceed 30 hours of operation)	92-858058K01
87	High Performance Gear Lube	Gear housing and gear lube monitor after break-in (after the first 25–30 hours of operation)	92-858064K01

3. Ensure that the rubber gasket is inside the cap for the gear lube monitor and install the cap. Do not overtighten.

NOTE: *After the drive has been operated and the gear lube is hot, the fluid expands and may be up to the "MAX OPERATING LEVEL" line (hot full line).*



41467

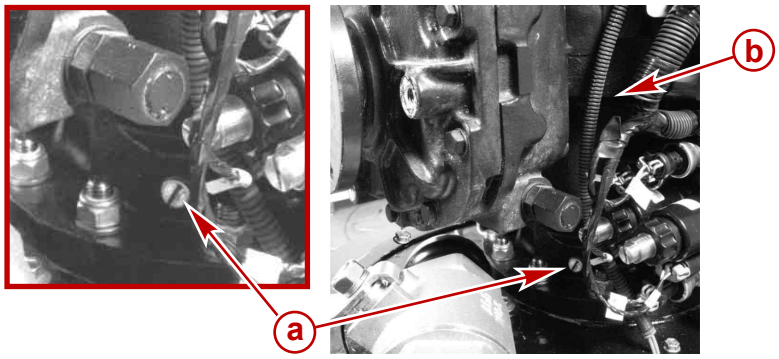
"MAX OPERATING LEVEL" line (hot full line)

Changing Gear Drive Lubricant

NOTE: *Change the drive gear lubricant when the drive is at operating temperature. Warmer lubricant flows more freely, carries away more impurities, and is easier to remove from the drive.*

With the Boat in the Water

1. Place oil-absorbent wipes or material around the area to contain any spilled lubricant.
2. Remove the fill and drain screw from the steering actuator.

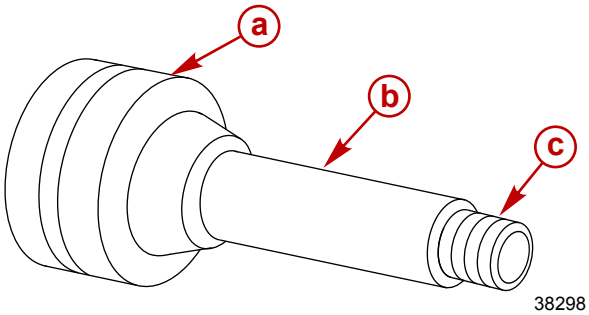


41463

Drop box model shown, all similar

a - Fill and drain screw
b - Steering actuator

3. Quickly install the special gear lube adapter with washer into the threaded hole for the drain and fill screw.

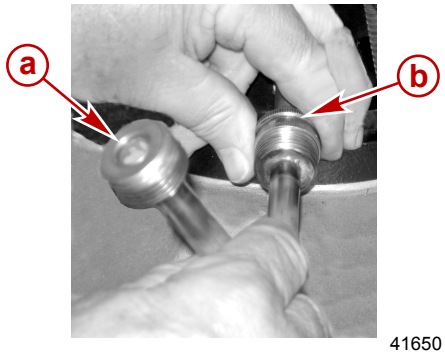


38298

a - Coupling nut and washer
b - Adapter
c - Threads into steering actuator (3/8 in.-16 UNC)

Description	Part Number
Gear lube adapter	91-24789A1

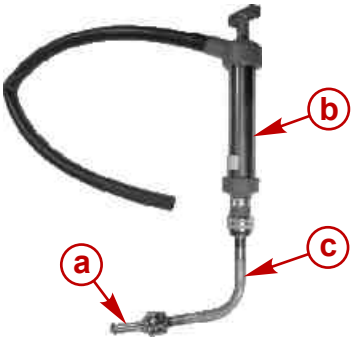
4. Install a suitable double-ended male adapter to the gear lube adapter.



41650

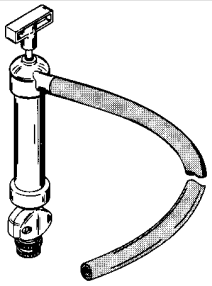
Typical adapter
- **a -** Double-ended male adapter
- **b -** Gear lube adapter and washer

5. Attach the crankcase oil pump or a suitable gear lube pump.

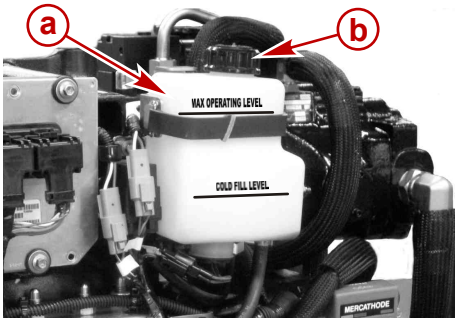


41732

Shown unattached for visual clarity
- **a -** Gear lube adapter and washer
- **b -** Crankcase oil pump
- **c -** Double-ended male adapter

Crankcase Oil Pump	91-90265A 5
 11591	Aids in the removal of drive gear lube without draining through the drive.

6. Remove the gear lube monitor cap.



41465

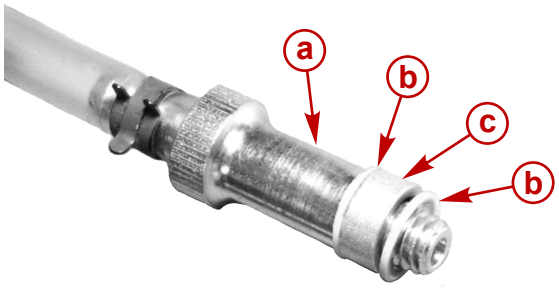
Shown without drive cover
- **a -** Gear lube monitor
- **b -** Cap

7. Operate the crankcase oil pump and remove the gear lube from the drive. Pump the gear lube into a suitable container. Properly dispose of the gear lube.
   IMPORTANT: If any water exits the fill and drain hole, or if the gear lube appears milky, the drive is leaking. Contact your Mercury Diesel authorized repair facility immediately.
8. Remove the crankcase oil pump and the two adapters.
9. Attach the specified gear lube pump or equivalent.
   a. Locate the adapter provided with the gear lube pump.

Description	Part Number
Quicksilver Gear Lube Pump	91-850730Q1

b. Assemble the sealing washer, spacer, and sealing washer on the threaded end of the adapter.

__NOTE:__ The spacer is required to prevent the adapter from threading in past the orifice in the fill and drain hole of the steering actuator. The adapter should thread approximately 7 mm (1/4 in.) into the actuator housing.



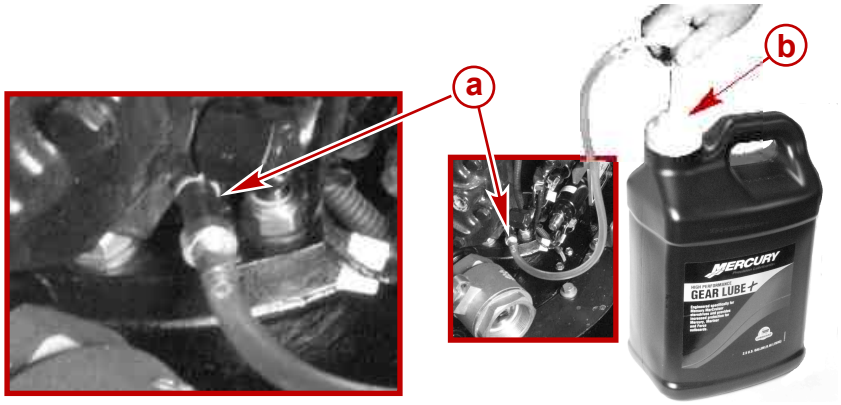
41636

a - Adapter
b - Sealing washer
c - Spacer

Qty.	Description	Part Number
1	Spacer	23-806445
1	Sealing washer	26-830749

c. Install and hand-tighten the adapter assembly into the fill and drain hole of the steering actuator.
IMPORTANT: Use Mercury or Quicksilver High Performance Gear Lube in the drive.

d. Attach the gear lube pump to a container of the specified gear lube.



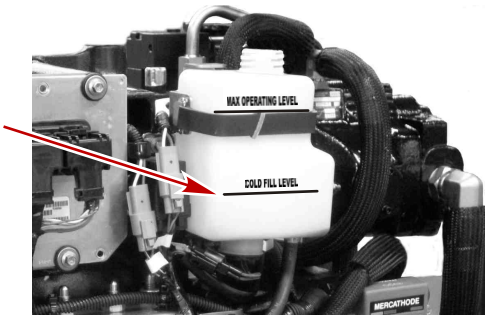
41620

a - Adapter assembly
b - Gear lube pump

Drive Model	Fluid Capacity (includes the drive and the gear lube monitor)	Fluid Type	Fluid Part Number
Zeus	5-1/4 L (5-1/2 US qt)	High Performance Gear Lube	92-858064K01, 1 L (1 US qt) 92-858065Q01, 9.5 L (2.5 US gal)

10. Operate the gear lube pump and begin to fill the drive.

11. Continue to pump gear lube into the drive until the gear lube appears in the gear lube monitor at the "COLD FILL LEVEL" line. Do not overfill.



41468

"COLD FILL LEVEL" line

12. Remove the gear lube pump and adapter assembly. Quickly install the steering actuator fill and drain washer and screw. Tighten the fill and drain screw to specification.

Description	Nm	lb-in.	lb-ft
Steering actuator fill and drain screw	6.7	60	–

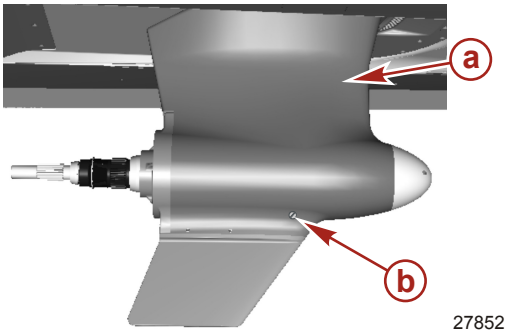
13. If the level is low, fill the gear lube monitor to the "COLD FILL LEVEL" line. Refer to **Filling**.
14. Ensure that the rubber gasket is inside the cap for the gear lube monitor and install the cap. Do not overtighten.
15. Recheck the gear lube level at the gear lube monitor after the first use. Refer to **Checking**.
IMPORTANT: The gear lube level in the gear lube monitor rises and falls during drive operation; always check the gear lube level when the drive is cool and the engine is shut down.

With the Boat Out of the Water

⚠ WARNING

Rotating propellers can cause serious injury or death. Never operate the boat out of the water with a propeller installed. Before installing or removing a propeller, remove the key from the key switch, place the drive in neutral, and engage the E-stop switch to prevent the engine from starting.

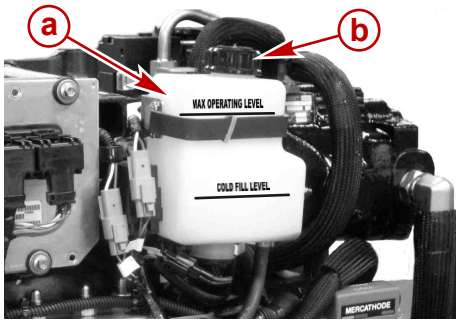
1. Remove the drive propellers. Refer to **Propellers**.
2. Remove the gearcase fill and drain screw and sealing washer.



27852

a - Gearcase
b - Fill and drain screw and sealing washer

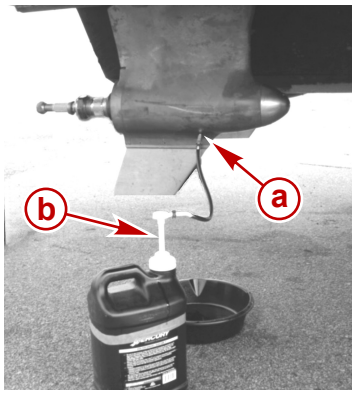
3. Remove the gear lube monitor cap.



41465

Shown without drive cover
- **a -** Gear lube monitor
- **b -** Cap

4. Drain the gear lube into a suitable container.
IMPORTANT: If any water exits the fill and drain hole, or if the gear lube appears milky, the drive is leaking. Contact your Mercury Diesel authorized repair facility immediately.
5. Allow the gear lube to drain completely. Properly dispose of the gear lube.
IMPORTANT: Use Mercury or Quicksilver High Performance Gear Lube in the drive.
6. Install a suitable gear lube pump into the gearcase fill and drain hole. Fill the drive with the specified gear lube.



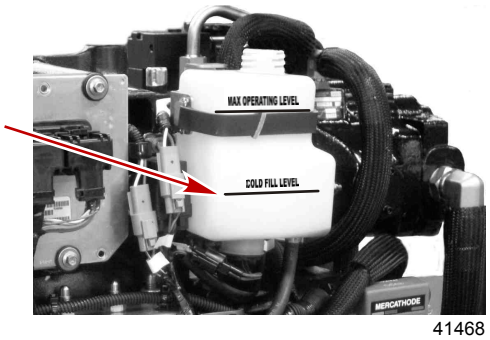
28391

- **a -** Fill and drain hole
- **b -** Gear lube and pump

Description	Part Number
Quicksilver Gear Lube Pump	91-850730Q1

Drive Model	Fluid Capacity (includes the drive and the gear lube monitor)	Fluid Type	Fluid Part Number
Zeus	5-1/4 L (5-1/2 US qt)	High Performance Gear Lube	92-858064K01, 1 L (1 US qt) 92-858065Q01, 9.5 L (2.5 US gal)

7. Continue to pump gear lube into the drive until the gear lube appears in the gear lube monitor at the "COLD FILL LEVEL" line. Do not overfill.



41468

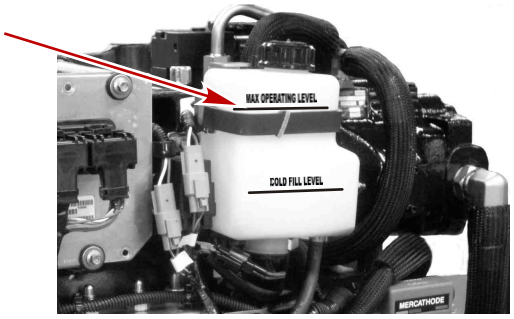
"COLD FILL LEVEL" line

8. Remove the gear lube pump and quickly reinstall the gearcase fill and drain screw and washer.

Description	Nm	lb-in.	lb-ft
Gear case fill and drain screw	6.7	60	–

9. Fill the gear lube monitor to the "COLD FILL LEVEL" line, if the level is low. Refer to **Filling**.
10. Ensure that the rubber gasket is inside the cap for the gear lube monitor and install the cap. Do not overtighten.
11. Install the drive propellers. Refer to **Propellers**.
12. Check the gear lube level at the gear lube monitor after the first use. Refer to **Checking**.

NOTE: *After the drive has been operated and the gear lube is hot, the fluid will expand and may reach the "MAX OPERATING LEVEL" line (hot full line).*



41467

"MAX OPERATING LEVEL" line (hot full line)

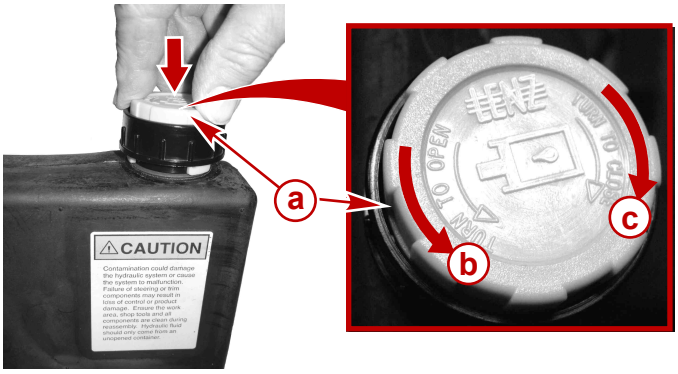
Steering Actuator and Trim—Hydraulic Oil

The steering actuator and trim system use a common hydraulic pump, filtering system, and hydraulic oil storage reservoir for lubrication and pressure. The pump, filter, and storage system are the same on all models. For specific procedures, refer to **Checking, Filling,** and **Changing**.

Checking

1. Using a clean, lint-free cloth, wipe the dirt and debris away from the cap and exterior of the steering actuator and trim fluid reservoir.

   NOTE: *The direction to rotate the cap to open or close is imprinted on the top of the cap.*
2. Push down and turn the reservoir cap and dipstick about 1/3 turn in the open direction.

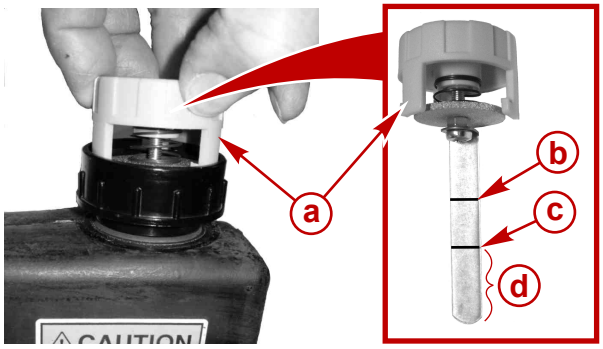


40235

a - Reservoir cap and dipstick
b - Open direction
c - Close direction

3. Lift the cap and dipstick from the neck of the reservoir.

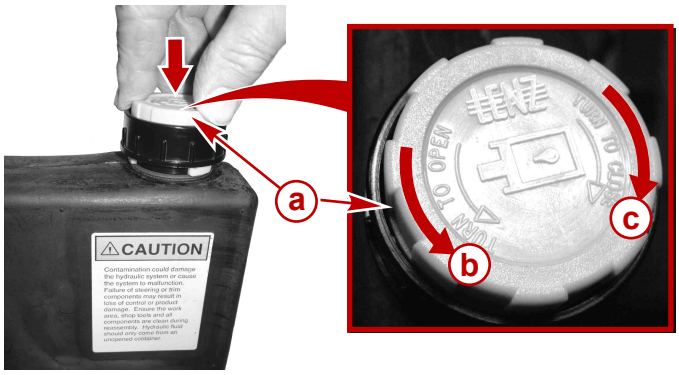
4. Inspect the fluid level, which should be at the full-cold mark.



40243

a - Cap and dipstick
b - Full-cold mark
c - Low-cold mark
d - Add

5. If the level is low, see **Filling**.
6. If the level is correct, insert the cap and dipstick into the neck of the reservoir. Push down and turn the reservoir cap in the close direction.



40235

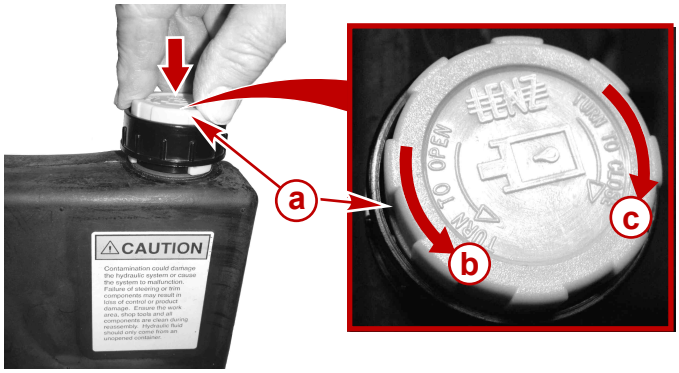
a - Cap and dipstick
b - Open direction
c - Close direction

Filling

1. Using a clean, lint-free cloth, wipe the dirt and debris away from the cap and exterior of the steering actuator and trim fluid reservoir.

   NOTE: *The direction to rotate the cap to open or close is imprinted on the top of the cap.*

2. Remove the cap and dipstick. Push down and turn the reservoir cap and dipstick about 1/3 turn in the open direction.

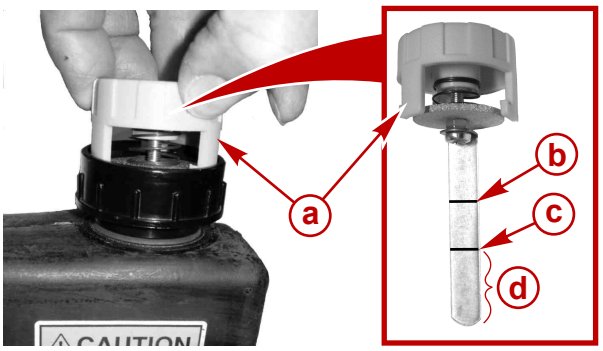


40235

a - Reservoir cap and dipstick
b - Open direction
c - Close direction

IMPORTANT: Always use the dipstick to determine the exact quantity of oil required.

3. Fill the hydraulic reservoir with the specified oil to bring the level up to the full-cold mark. Do not overfill.



40243

a - Cap and dipstick
b - Full-cold mark
c - Low-cold mark
d - Add

Tube Ref No.	Description	Where Used	Part No.
138	Synthetic Power Steering Fluid SAE 0W-30	Hydraulic system	92-858076K01

4. Insert the cap and dipstick into the neck of the reservoir. Push down and turn the reservoir cap in the close direction.

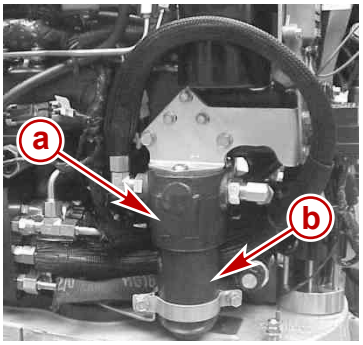
Changing

You do not need to change the steering actuator and trim system oil and filter unless they become contaminated with water or debris. A switch in the high-pressure filter system will set a VesselView fault code to alert the operator when the hydraulic oil and filter require changing.

Change the hydraulic oil and filter whenever the VesselView fault code is displayed.

VesselView Fault Code	Reason	Task
"Filter Dirty Fault"	Hydraulic oil filter is dirty	Change the oil and filter as soon as reasonably possible, if not immediately

Contact your local Mercury Diesel repair facility for additional information.



37306

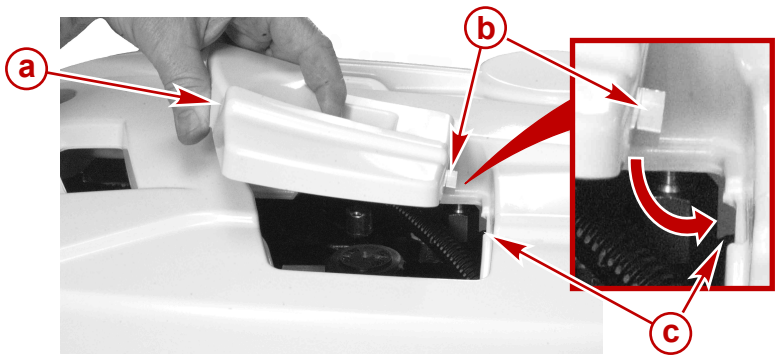
High-pressure filter system
a - Filter head with switch (switch not shown)
b - Filter housing with filter element

Transmission Oil (Fluid) and Filter

Checking the Transmission Oil Level

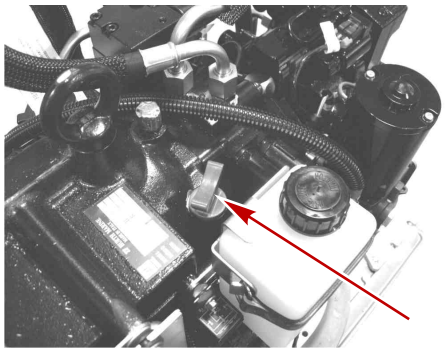
If the drive is equipped with a drive cover, you can check the transmission oil (fluid) level through the access cover or with the drive cover removed, if equipped.

1. If equipped with a drive cover, lift the front of the access cover from the drive cover or remove the drive cover, to access the transmission dipstick.



a - Access cover
b - Molded clip
c - Indented edge

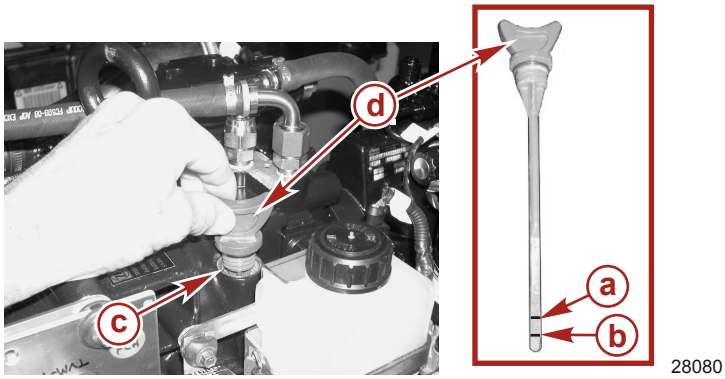
2. Remove the dipstick. Wipe the dipstick with a clean, lint-free cloth.



Transmission dipstick, with cover removed for clarity

3. Insert the dipstick, resting it on the top of the threaded hole.
4. Remove the dipstick and check the oil level indicated. The oil level should be between the maximum and minimum marks on the dipstick.

NOTE: *Oil from the transmission oil cooler and hoses may drain into the transmission, causing an oil level slightly above the maximum mark.*



Checking—dipstick resting on top of threaded hole
a - Maximum mark
b - Minimum mark
c - Top of threaded hole
d - Dipstick

5. If the level is correct, install the dipstick.
6. If the level is low, add the specified transmission oil through the dipstick threaded hole to bring the level up to the maximum mark on the dipstick.

Description	Fluid Type	Fluid Part Number
Transmission and drop box	Synthetic Power Steering Fluid SAE 0W-30	92-858077K01

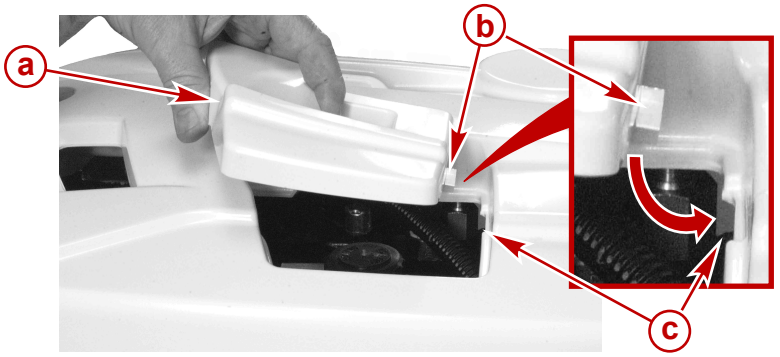
NOTE: *If the transmission oil level is extremely low, contact your local Mercury Diesel authorized repair facility.*

IMPORTANT: For a more accurate measurement, operate the engine at 1500 RPM for three minutes immediately before checking the oil level.

NOTICE

The seawater pumps on vessels equipped with Zeus pod drives can be damaged by excessive exhaust aeration due to inadequate water flow. To ensure adequate water flow across the seawater inlets, make sure that the vessel is underway before exceeding 1500 RPM.

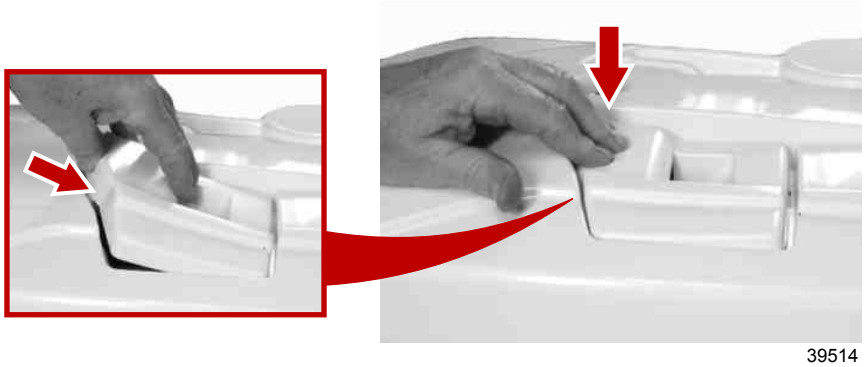
7. Start the engine and operate at 1500 RPM for three minutes to fill all the hydraulic circuits. To avoid excessive exhaust aeration of the seawater, do not operate the engine above 1500 RPM.
8. Stop the engine and quickly check the oil level.
9. If the oil level is low, add the specified transmission oil to bring the level up to the maximum mark on the dipstick.
10. Install the dipstick.
11. If your model is equipped with a drive cover, install the access cover.
    a. Insert the molded clip on the aft end of the access cover under the indented edge of the cover.



a - Access cover
b - Molded clip
c - Indented edge

39506

    b. Align the access cover with the opening in the top cover.
    c. Press down evenly on the front of the access cover. A click-sound can be heard when the access cover snaps into final position.



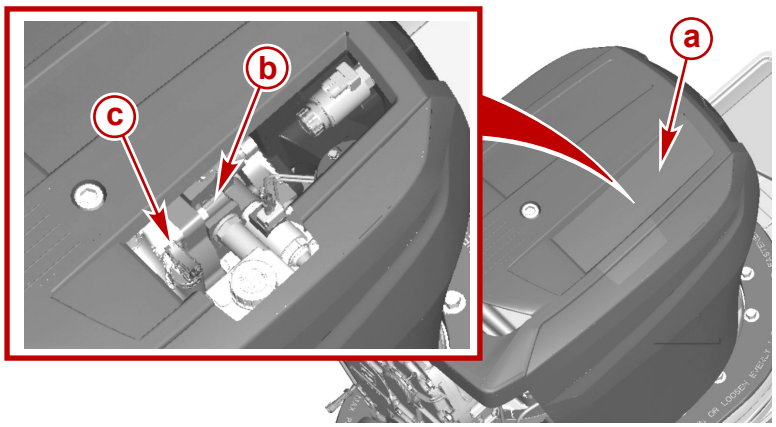
39514

Completing the access cover installation

Filling

You can fill the transmission with oil through the access cover on the drive cover or with the drive cover removed.

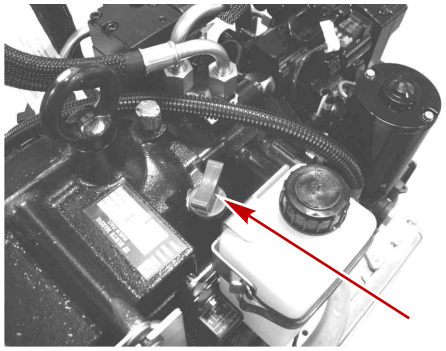
1. To access the transmission dipstick, you must remove the access cover or remove the drive cover, if equipped. Refer to **Removing the Drive Cover**.



25914

a - Access cover
b - Transmission
c - Transmission dipstick

2. Remove the dipstick. Wipe the dipstick with a clean, lint-free cloth. Check the oil level as outlined in **Checking.**



37829

Transmission dipstick

3. Add the specified transmission oil through the dipstick threaded hole to bring the level up to the maximum mark on the dipstick.

Description	Fluid Capacity	Fluid Type	Fluid Part Number
Transmission only (without drop box)	4 L (4-1/4 US qt)	Synthetic Power Steering Fluid SAE 0W-30	92-858077K01
Transmission and drop box	5-1/4 L (5-1/2 US qt)		
Transmission, drop box and remote (engine mounted) transmission oil cooler	5-1/2 L (6 US qt)		

IMPORTANT: For a more accurate measurement, operate the engine at 1500 RPM for three minutes immediately before checking the oil level.

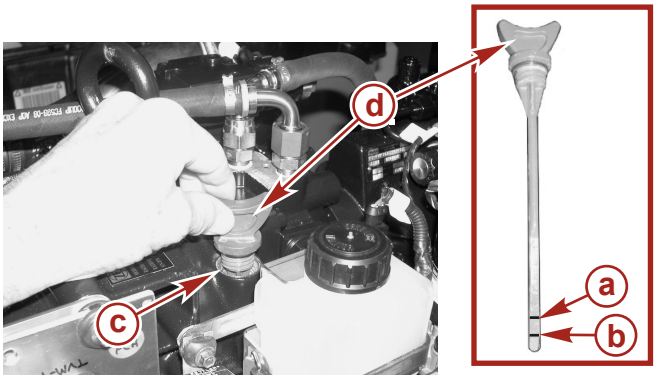
NOTE: *Additional transmission oil may be required to fill empty cavities in the transmission filter and oil coolers after changing the transmission oil. Always use the dipstick to establish the correct oil level.*

NOTICE

The seawater pumps on vessels equipped with Zeus pod drives can be damaged by excessive exhaust aeration due to inadequate water flow. To ensure adequate water flow across the seawater inlets, make sure that the vessel is underway before exceeding 1500 RPM.

4. Start the engine and operate at 1500 RPM for three minutes to fill all of the hydraulic circuits and empty cavities. To avoid excessive exhaust aeration of the seawater, do not operate the engine above 1500 RPM.
5. Stop the engine. Quickly unscrew and remove the dipstick.

6. Check the oil level. Refer to **Checking.**



28080

a - Maximum mark
b - Minimum mark
c - Top of threaded hole
d - Dipstick

7. If the oil level is low, add the specified transmission oil to bring the level up to the maximum mark on the dipstick.
8. Install the dipstick.
9. Install the access cover onto the drive cover if it was removed.
10. Install the drive cover if it was removed. Refer to **Installing the Drive Cover.**

Changing

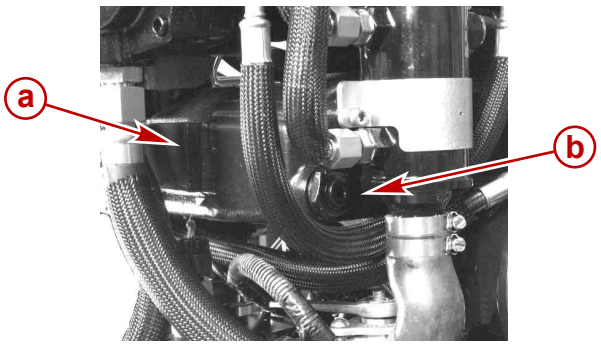
NOTICE

Discharge of oil, coolant, or other engine/drive fluids into the environment is restricted by law. Use caution not to spill oil, coolant, or other fluids into the environment when using or servicing your boat. Be aware of the local restrictions governing the disposal or recycling of waste, and contain and dispose of fluids as required.

⚠ WARNING

The rubber interface ring seal has an outside coating that protects the inner core. Tears, cuts, scrapes, or exposure to lubricants or sealing compounds can damage this coating and the inner core causing water to leak into the boat. Use caution when installing and working around the interface ring seal to prevent damage. Do not use any lubricants or sealing compounds during installation.

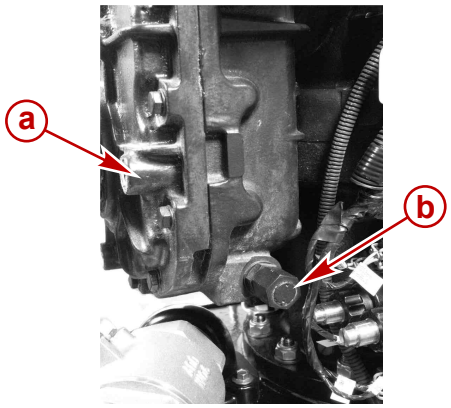
1. Remove the drive cover, if equipped. Refer to **Removing the Drive Cover**.
2. Lay down oil-absorbing wipes or material to catch excess transmission oil.
3. Remove the M30 drain plug and sealing washer from the aft, starboard end of the transmission and drain the transmission oil (fluid) into a suitable container.



41194

a - Transmission
b - Drain plug and sealing washer

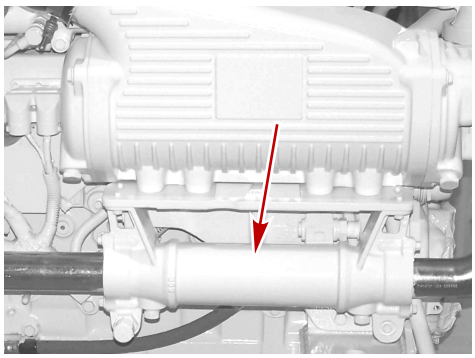
4. On models with a drop box, remove the drain cap from the lower, port side of the drop box. Drain the transmission oil into a suitable container.



41195

a - Drop box
b - Drain cap

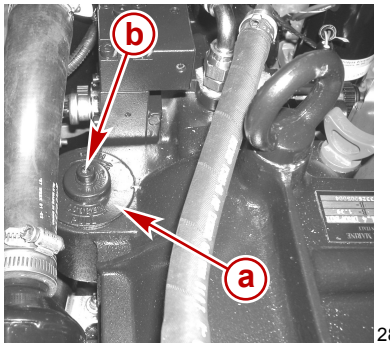
NOTE: *Except in the cases of extreme contamination or mechanical failure, it is not necessary to drain the oil from the engine-mounted transmission oil cooler, if equipped.*



38247

Engine-mounted transmission oil cooler

5. Dispose of the transmission oil properly.
6. Clean the exterior of the transmission around the oil filter assembly.
7. Use a 6M Allen wrench and remove the oil filter assembly screw.

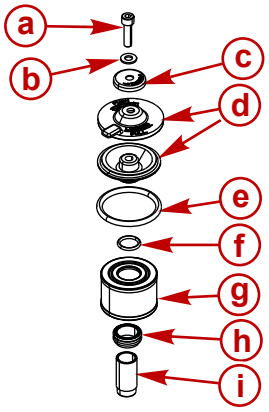


28239

a - Fluid filter assembly
b - Assembly screw

8. Remove the filter cover assembly.

9. Remove and discard the filter element and the O-rings.



28242

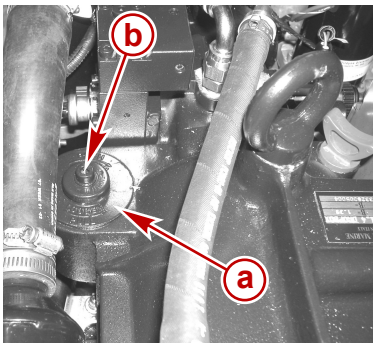
- **a -** Assembly screw
- **b -** Washer
- **c -** Cover
- **d -** Filter cover assembly
- **e -** O-ring
- **f -** O-ring
- **g -** Filter element
- **h -** Seal
- **i -** Oil pipe

10. Coat the new O-rings with transmission oil.
11. Install the new O-rings and filter element.

NOTICE

Improper installation of the transmission fluid filter assembly may cause the fluid to foam or leak out, resulting in decreased efficiency and damage to the transmission. Properly seat the transmission fluid filter during installation.

12. Install the oil filter assembly in the transmission cavity by turning the assembly clockwise during installation.
13. Using a 6M Allen wrench, tighten the filter assembly screw to specification.



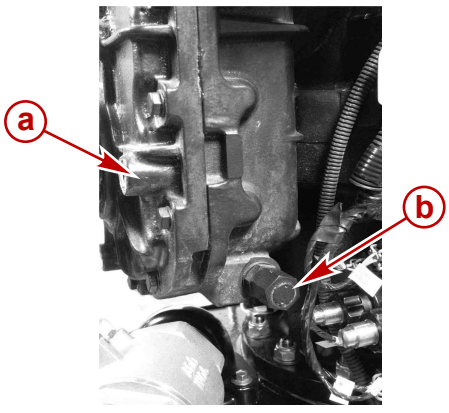
28239

- **a -** Assembly screw
- **b -** Fluid filter assembly

Description	Nm	lb-in.	lb-ft
Filter assembly screw	7	62	–

IMPORTANT: Use new sealing washers to avoid leaks.

14. On models with a drop box, install the drain cap. Tighten the drain cap to specification.

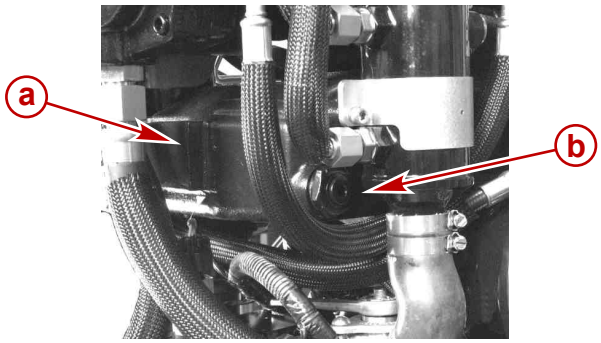


41195

- **a -** Drop box
- **b -** Drain cap

Description	Nm	lb-in.	lb-ft
Drop box drain cap	50	–	37

15. Install the transmission drain plug with a new sealing washer. Tighten the drain plug to specification.



41194

a - Drain plug and sealing washer
b - Transmission

Description	Nm	lb-in.	lb-ft
Transmission drain plug	90	–	66

NOTE: *The drop box fills with oil when the transmission is filled. The transmission may have to be operated to fill the engine-mounted cooler. Always use the dipstick to determine the quantity of oil required.*

16. Fill the transmission, drop box, and engine-mounted cooler, if equipped, to the proper level with the specified oil. Refer to **Filling.**
17. After first start-up, check for leaks. If leaks exist, stop operation immediately. Check the components and repair as needed.
18. Install the drive cover, if equipped. Refer to **Installing the Drive Cover.**

Seawater System

Draining the Seawater System

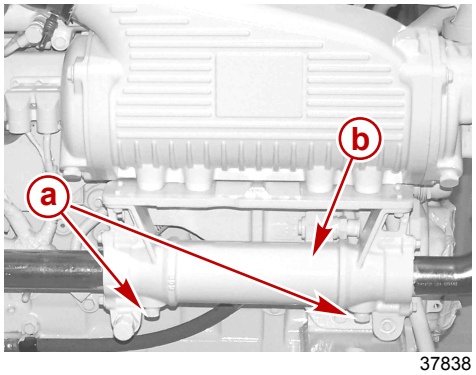
IMPORTANT: The vessel must be as level as possible to ensure complete draining of the cooling system.

Drain the seawater system of the power package before flushing or before cold weather (freezing temperature), seasonal storage, or extended storage.

IMPORTANT: The engine must not be operating during the draining procedure.

Boat out of the Water

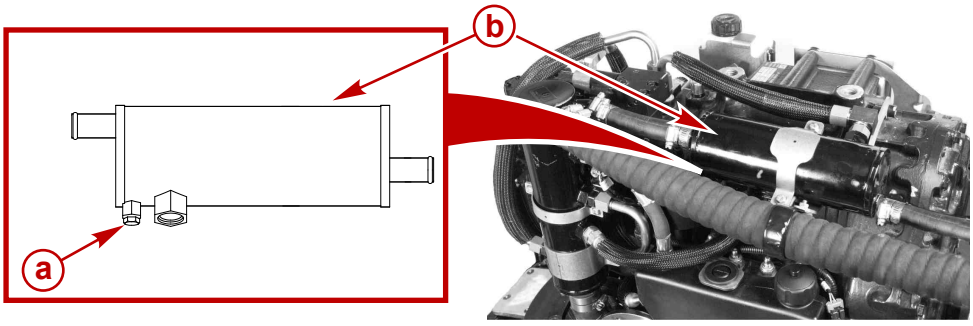
1. Remove the boat from the water.
2. Open the seawater inlet seacock and seawater return (overboard) seacock.
3. Drain the seawater.
4. On models with a drop box and engine mounted transmission oil cooler, remove the two anode plugs and drain the seawater.



37838

a - Anode (drain) plugs
b - Transmission oil cooler

5. On models with a drop box and drive mounted transmission oil cooler, as shown, remove the drain plug. Drain the seawater.



41401

a - Drain plug
b - Transmission oil cooler

6. On models equipped with a seawater strainer, refer to **Seawater Strainer**.
7. Depending on equipment, apply sealant to the transmission oil cooler drain plug or anode plugs before installation. Tighten the drain plug securely or the anode plugs to specification.

Tube Ref No.	Description	Where Used	Part No.
19	Perfect Seal	Drain plug and anode plugs	92-34227Q02

Description	Nm	lb-in.	lb-ft
Anode plugs	30	–	22

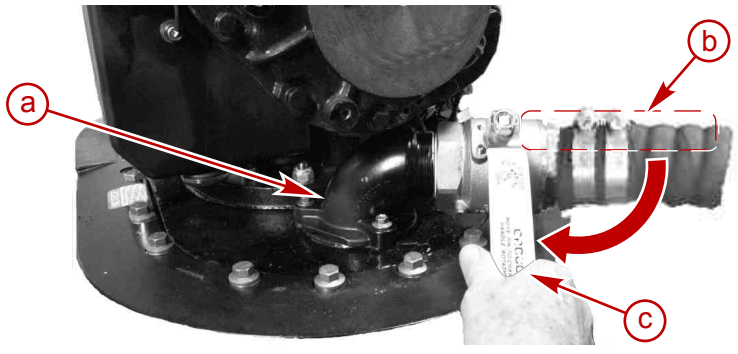
8. Place a tag at the helm and in the engine compartment stating that the seacocks are open and must be closed and all drain plugs and hoses installed, prior to placing the boat in the water.

Boat in the water

⚠ CAUTION

Water can enter the bilge when draining the seawater system, damaging the engine or causing the boat to sink. Remove the boat from the water or close the seawater inlet and discharge seacocks and operate the bilge pump when draining. Do not operate the engine when draining the seawater system.

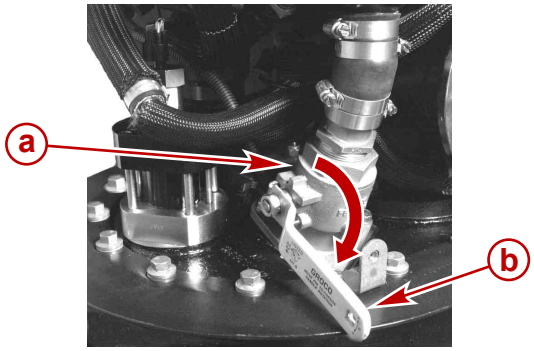
1. On models using a through-the-hull seawater inlet, refer to your boat manufacturer for instructions and close the seawater inlet valve or seacock.
2. On models using the through-the-drive seawater inlet, close the seawater inlet seacock. Rotate the handle in the direction indicated by the arrow.



41196

Typical port handle
a - Inlet seacock
b - Former position (open)
c - Handle in closed position

3. Close the seawater return (overboard) seacock. Rotate the handle in the direction indicated by the arrow.



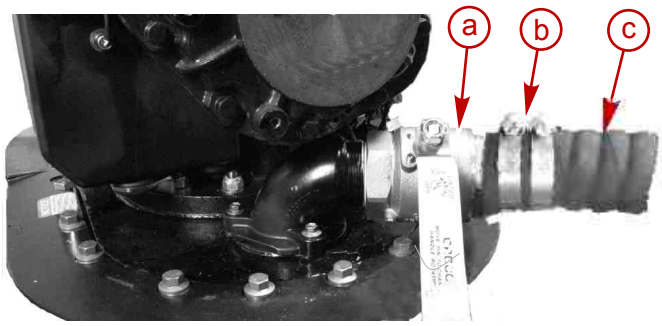
41199

Drive cover removed for clarity
- **a -** Return seacock
- **b -** Handle in closed position

4. Turn on the bilge pump.

   NOTE: *In the following step, lower or bend the hose as necessary to allow the seawater to drain completely.*

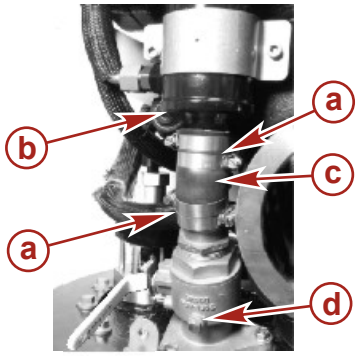
5. Remove the hose from the seawater inlet seacock. Drain the seawater.



41200

Typical connection
- **a -** Inlet seacock
- **b -** Dual hose clamps
- **c -** Hose

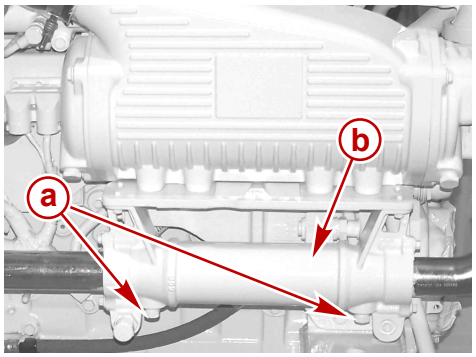
6. Remove the seawater hose from the outlet end of the primary cooler for the hydraulic oil. Drain the seawater.
7. Remove the drain screw on the seacock. Drain the seawater.



41264

- **a -** Dual hose clamps
- **b -** Primary cooler
- **c -** Seawater hose
- **d -** Drain screw

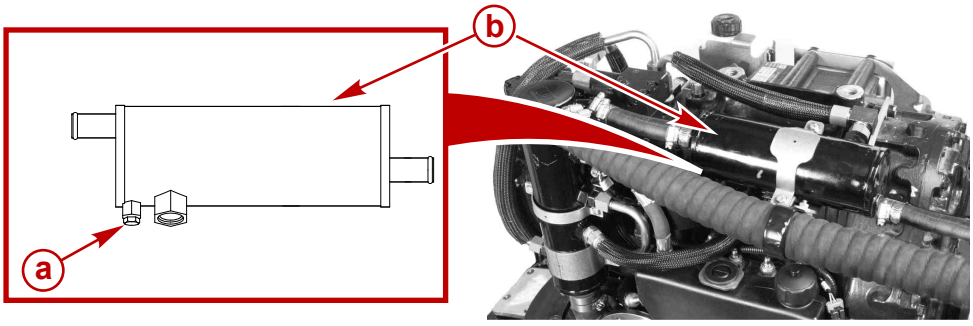
8. On models with a drop box and engine mounted transmission oil cooler, remove the two anode plugs and drain the seawater.



37838

- **a -** Anode (drain) plugs
- **b -** Oil cooler

9. On models with a drop box and drive mounted transmission oil cooler, as shown, remove the drain plug and drain the seawater.



41401

a - Drain plug
b - Transmission oil cooler

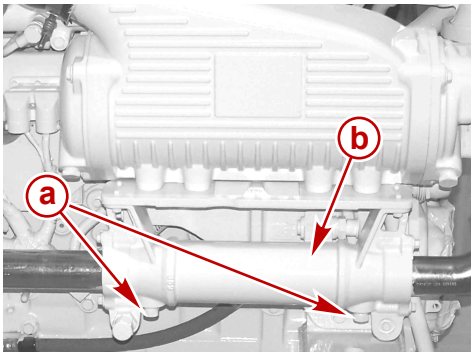
10. On models equipped with a seawater strainer, refer to **Seawater Strainer**.
11. On models with a drop box and drive mounted transmission oil cooler:
    a. Apply sealant to the threads of the drain plug for the transmission oil cooler.

Tube Ref No.	Description	Where Used	Part No.
19	Perfect Seal	Drain plug	92-34227Q02

    b. Install the drain plug.
    c. Tighten the drain plug securely.
12. On models with a drop box and engine mounted transmission oil cooler:
    a. Apply sealant to the threads of the anode plugs.

Tube Ref No.	Description	Where Used	Part No.
19	Perfect Seal	Anode plugs	92-34227Q02

    b. Install the anode plugs.
    c. Tighten the anode plugs to specification.



37838

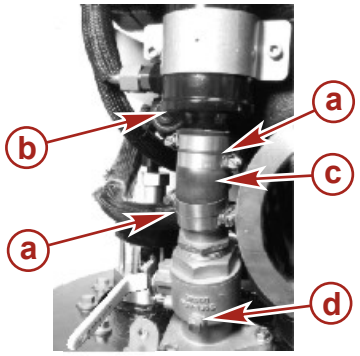
a - Anode (drain) plugs
b - Oil cooler

Description	Nm	lb-in.	lb-ft
Anode plugs	30	–	22

13. Reconnect the seawater hoses. Tighten the dual hose clamps securely.
14. Apply sealant to the threads of the drain screw for the return seacock.

Tube Ref No.	Description	Where Used	Part No.
19	Perfect Seal	Threads of the drain screw for the return seacock	92-34227Q02

15. Install the drain screw on the return seacock. Tighten the screw securely.



41264

a - Dual hose clamps
b - Primary cooler
c - Seawater hose
d - Drain screw

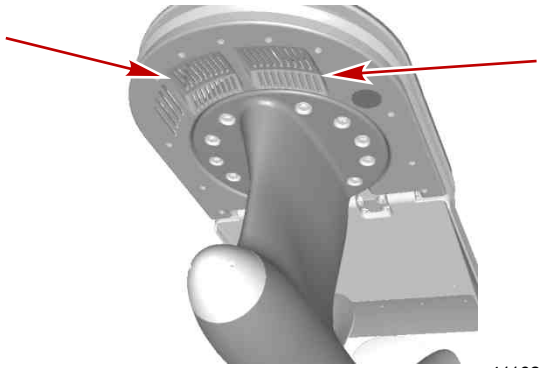
NOTICE

Water trapped in the seawater section of the cooling system can cause corrosion or freeze damage. Drain the seawater section of the cooling system immediately after operation or before any length of storage in freezing temperatures. If the boat is in the water, keep the seacock closed until restarting the engine to prevent water from flowing back into the cooling system. If the boat is not fitted with a seacock, leave the water inlet hose disconnected and plugged.

16. Place a tag at the helm and in the engine compartment stating that the seacocks are closed and must be opened after all drain plugs and hoses are installed, prior to starting the engines.

Checking the Seawater Pickup on the Drive

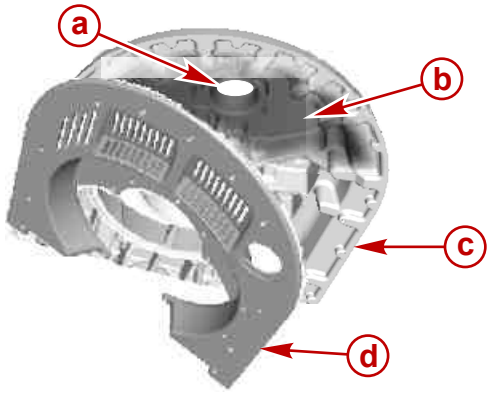
1. Ensure that the water inlet openings for the seawater pickup are clean and not obstructed. Carefully remove any obstructions. Do not damage the composite seawater pickup cover.



41162

Inlet openings for seawater pickup (cavity not visible in this view)

2. Looking through the inlet openings, visually inspect the cavity between the inlet cover and the center section plate for marine growth (shells, crustaceans, etc.). If marine growth is found in the cavity, contact your Mercury Diesel repair facility.



41411

Shown with cover removed for clarity
a - Seawater inlet to seacock
b - Cavity (shaded area)
c - Center section plate
d - Cover

Flushing the Seawater System

Before seasonal or extended storage, we recommend flushing the seawater cooling system to avoid salt or silt buildup. Contact your Mercury Diesel authorized repair facility for additional information.

Battery

All lead acid batteries discharge when not in use. Recharge every 30 to 45 days, or when specific gravity drops below battery manufacturer's specifications.

Refer to specific instructions and warnings accompanying your battery. If this information is not available, observe the following:

⚠ WARNING

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

⚠ WARNING

Recharging a weak battery in the boat, or using jumper cables and a booster battery to start the engine, can cause serious injury or product damage from fire or explosion. Remove the battery from the boat and recharge in a ventilated area away from sparks or flames.

Electrical System

1. Check for loose, damaged, or corroded fasteners.
2. Check for loose, damaged, or corroded wiring and connectors.

Cooling System and Exhaust System

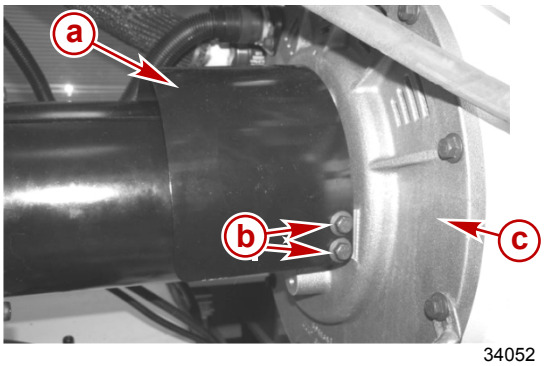
1. Inspect the cooling and exhaust systems for damage or leaks.
2. Check the cooling and exhaust system hose clamps for tightness.

Lubrication

Driveshaft Slip-Joint

The driveshaft has a slip-joint that must be lubricated through a grease fitting. Part of the protective driveshaft shield must be temporarily removed for access to the grease fitting.

1. Remove the driveshaft shield on the engine end.

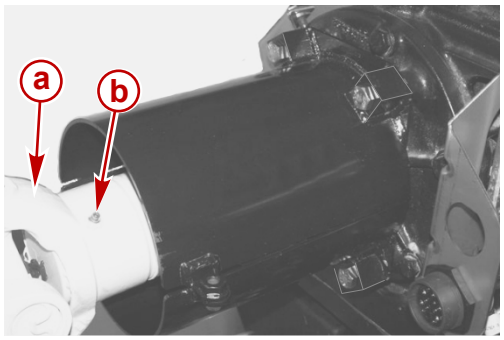


34052

Shield on engine end

a - Driveshaft shield
b - Screw (two on each side)
c - Engine end

2. Lubricate the driveshaft slip-joint through the grease fitting.



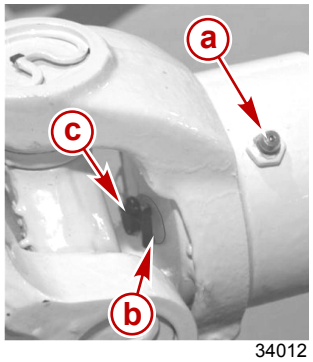
34051

a - Driveshaft
b - Grease fitting

Tube Ref No.	Description	Where Used	Part No.
42	U-joint and Gimbal Bearing Grease	Driveshaft slip-joint	8M0071842

NOTE: *A cup plug is installed in the center of the nearest universal joint on the driveshaft slip-joint. The plug retains grease in the spline cavity. A hole in the center of the plug acts as a pressure relief for grease in the spline cavity.*

3. Pump grease into the grease fitting for the slip-joint until grease is expelled from the pressure relief hole in the cap plug.



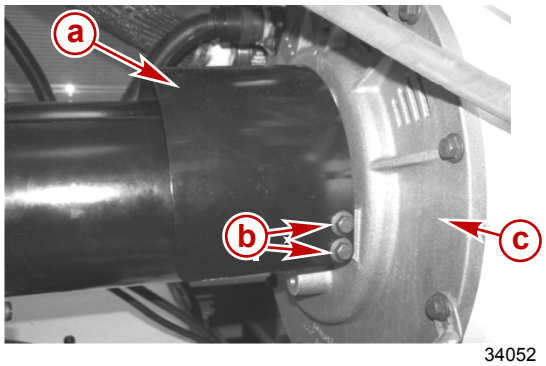
34012

a - Grease fitting
b - Cap plug
c - Expelled grease

4. Apply adhesive to the threads of the flange-head screws for the driveshaft shield on the engine end.

Tube Ref No.	Description	Where Used	Part No.
10	Loctite 277	Driveshaft shield retaining screw or nut	Obtain Locally

5. Install the driveshaft shield on the engine end using the flange-head screws as shown. Tighten the screws to specification.



34052

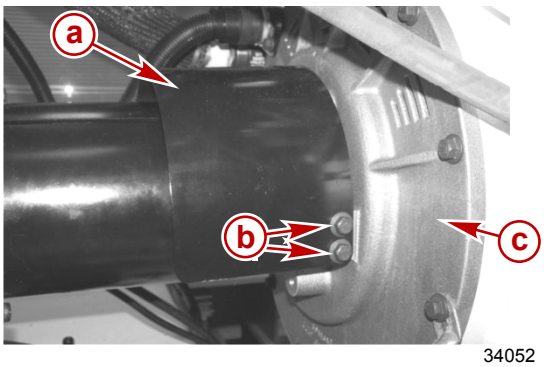
a - Top shield
b - Driveshaft shield to engine screw
c - Engine end

Description	Nm	lb. in.	lb. ft.
Driveshaft shield screw—engine end	36	–	27

Driveshaft U-Joints

NOTE: *In addition to the task and interval for inspecting and lubricating the driveshaft U-joints every 250 hours or one year (whichever occurs first), you must replace the U-joints every 1000 hours or two years (whichever occurs first). Contact a Mercury Diesel authorized repair facility for information on the nearest driveshaft service location.*

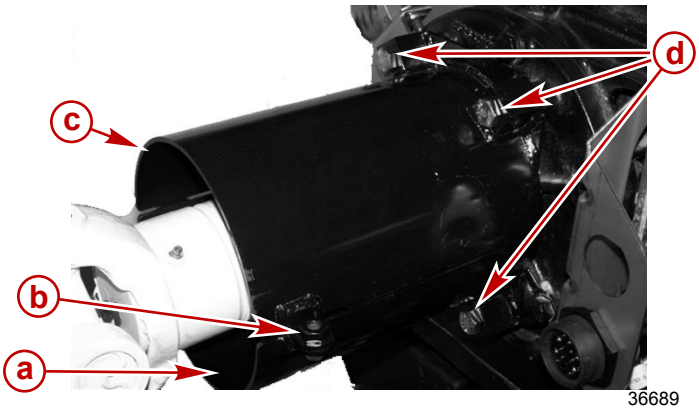
1. Remove the driveshaft shield on the engine end.



34052

a - Driveshaft shield
b - Screw (two on each side)
c - Engine end

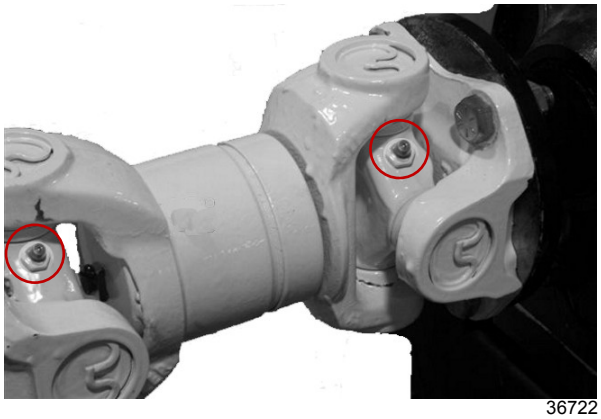
2. Remove the top and bottom driveshaft shields on the transmission end as shown.



36689

a - Bottom shield
b - Driveshaft shield upper-to-lower retaining hardware (2)
c - Top shield
d - Driveshaft shield retaining screw (4)

3. Visually inspect each U-joint bearing for:
   a. Seal deterioration or damage.
   b. The appearance of rust or fretting around the yokes.
   c. If any of these conditions exist contact a Mercury Diesel authorized repair facility for additional information.
4. Lubricate the driveshaft U-joints through the grease fittings, if equipped, with approximately 3–4 pumps from a handheld mechanical grease gun.



36722

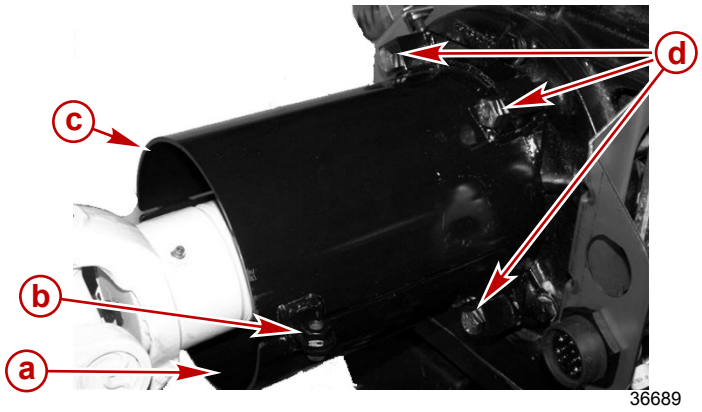
Driveshaft U-joint with grease fittings

Tube Ref No.	Description	Where Used	Part No.
42	U-joint and Gimbal Bearing Grease	Driveshaft slip-joint and U-joints	8M0071842

5. Apply adhesive to the threads of the screws and bolts used to retain the driveshaft shields.

Tube Ref No.	Description	Where Used	Part No.
10	Loctite 277	Driveshaft shield retaining screw and nut	Obtain Locally

6. Install the top and bottom driveshaft shields on the transmission end as shown. Tighten the driveshaft shield retaining screws and nuts to specifications.

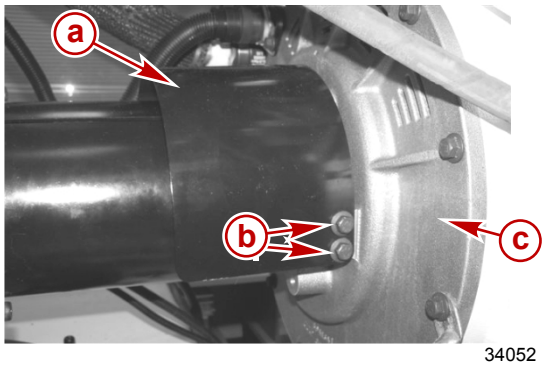


36689

a - Bottom shield
b - Driveshaft shield upper-to-lower retaining screw, nut, and washer (2)
c - Top shield
d - Driveshaft shield retaining screw and washer (4)

Description		Nm	lb-in.	lb-ft
Driveshaft shield retaining screw—transmission end	QSC and QSB models	36	–	27
	QSM models	47	–	35
Driveshaft shield upper-to-lower retaining screw and nut—transmission end		17	150.4	–

7. Install the engine end driveshaft shield. Tighten the screws to specification.



34052

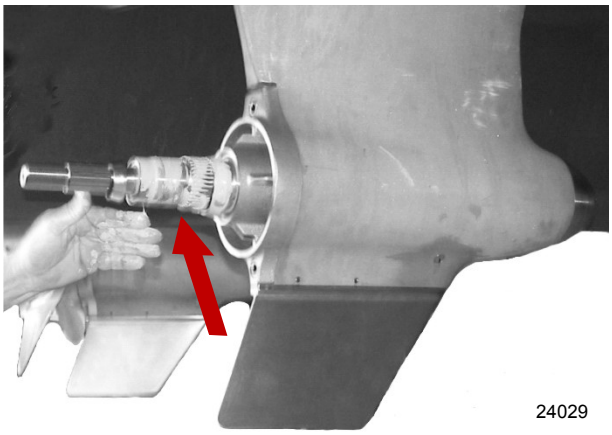
a - Driveshaft shield
b - Screw (two on each side)
c - Engine end

Description	Nm	lb-in.	lb-ft
Driveshaft shield screw—engine end	36	–	27

Propeller Shaft

1. Remove the propellers. Refer to **Propellers**.

2. Apply a liberal coat of one of the following lubricants to the propeller shafts.



Tube Ref No.	Description	Where Used	Part No.
94	Anti-Corrosion Grease	Propeller shafts	Obtain Locally
34	Special Lubricant 101	Propeller shaft	802859A1
95	2-4-C Marine Lubricant with PTFE	Propeller shaft	92-802859A 1

3. Install the propellers. Refer to **Propellers**.

Corrosion and Corrosion Protection

The Causes of Corrosion

NOTICE

Washing the MerCathode assembly can damage components and lead to rapid corrosion. Do not use any cleaning equipment such as brushes or high-pressure washers to clean the MerCathode assembly.

Whenever two or more dissimilar metals (like those found on the drive) are submerged in a conductive solution, such as saltwater, polluted water, or water with a high mineral content, a chemical reaction takes place causing electrical current to flow between metals. The electrical current flow causes the metal that is most chemically active, or anodic, to erode. This is known as galvanic corrosion and, if not controlled, it will in time cause the need for replacement of power package components exposed to water. Refer to the **Marine Corrosion Protection Guide** (90-88181301).

Corrosion Protection

These power packages have anodes as standard equipment to help protect them from galvanic corrosion under moderate conditions.

The MerCathode System and sacrificial anodes will provide corrosion protection under normal usage. However, boats connected to AC shore power require additional protection to prevent destructive low-voltage galvanic currents from passing through the shore-power ground wire. A Quicksilver Galvanic Isolator can be installed to block the passage of these currents while providing a path to ground for dangerous fault (shock) currents. Refer to **Diesel Parts and Accessories Guide** (90-892645008) or the **Mercury Accessories Guide** (90-8M0062697) for part numbers.

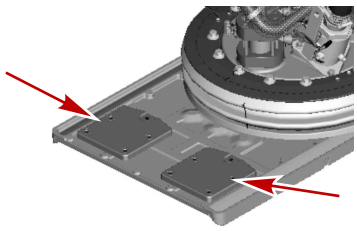
IMPORTANT: If AC shore power is not isolated from boat ground, the MerCathode System and anodes may be unable to handle the increased galvanic corrosion potential.

Anodes and MerCathode System

Anodes help protect against galvanic corrosion by sacrificing their metal to be slowly eroded instead of the metal components on the drive or vessel.

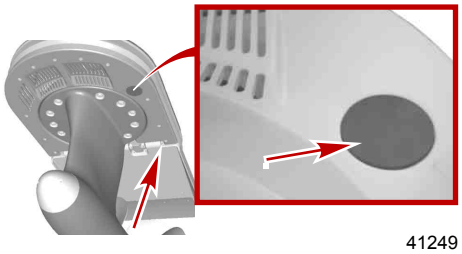
Corrosion protection for the drive is provided by sacrificial anodes installed on the trim tabs. Other sacrificial anodes may be mounted on the vessel to ensure against corrosion of vessel components.

IMPORTANT: Sacrificial anodes must be inspected periodically. Replace the sacrificial anodes if they are eroded 50 percent or more. Refer to Scheduled Maintenance.

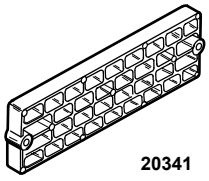
Anodes and MerCathode System Locations		
Description	**Location**	**Figure**
Trim tab anode plates	Mounted on the trim tab	 41251

The MerCathode system uses a reference electrode and an anode assembly to help protect against galvanic corrosion. The MerCathode controller is mounted on the transmission.

The system should be tested to ensure adequate output. The test should be performed where the boat is moored, using the Quicksilver Reference Electrode and Test Meter. For testing, contact a Mercury Diesel authorized repair facility or refer to the appropriate service manual.

Anodes and MerCathode System Locations		
Description	**Location**	**Figure**
MerCathode system	The MerCathode reference electrode and anode are mounted to the composite cover on the underside of the drive. The MerCathode controller is mounted on the transmission. The controller harness connects the components.	 41249

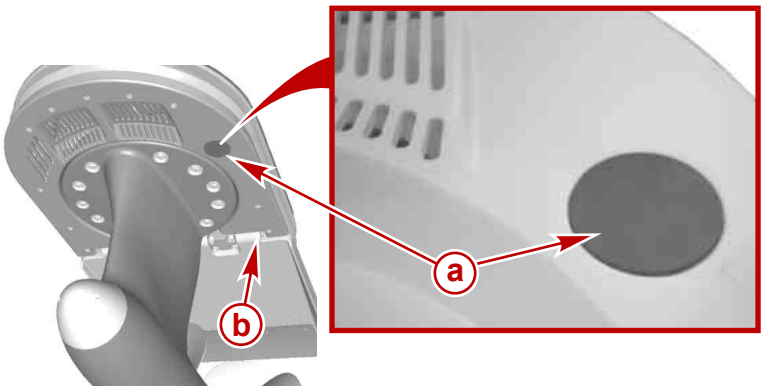
Other sacrificial anodes, if equipped, may be mounted on the vessel to protect against galvanic corrosion. Refer to the operation and maintenance manual provided by the boat manufacturer for additional information about vessel mounted anodes.

Other Anodes and Locations		
Description	**Location**	**Figure**
Anode kit (if equipped)	Mounted to the boat transom	 20341

Reference Electrode Wire of the MerCathode System

NOTICE
Washing the MerCathode assembly can damage components and lead to rapid corrosion. Do not use any cleaning equipment such as brushes or high-pressure washers to clean the MerCathode assembly.

Do not pressure-wash the reference electrode of the MerCathode assembly. Doing so damages the coating on the reference electrode wire and decrease the corrosion protection.



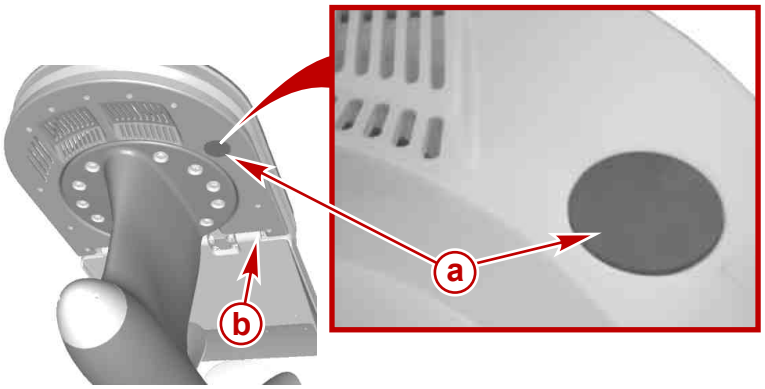
41163

a - Anode
b - Reference electrode (not visible in this view)

MerCathode Anode

Checking

Inspect the MerCathode anode and replace the anode if damaged.



41163

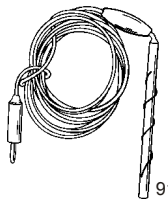
a - Anode
b - Reference electrode (not visible in this view)

Replacing

Contact your Mercury Diesel authorized repair facility.

MerCathode System Testing

If the boat is equipped with a Quicksilver MerCathode system, test the system to ensure that it is providing adequate output to protect the underwater metal parts on the boat. The test should be made where the boat is moored, using a Quicksilver Reference Electrode and Test Meter.

Reference Electrode	91-76675T 1
 9188	Senses the electrical current in the water when testing the MerCathode system. Use to check hull potential.

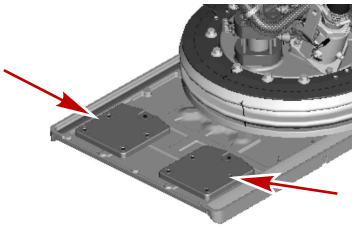
Contact a Mercury Diesel authorized repair facility for testing or refer to the appropriate service manual.

Trim Tab Anode

Checking

1. Inspect the trim tab anodes.

2. Replace the anode if eroded 50 percent or more.



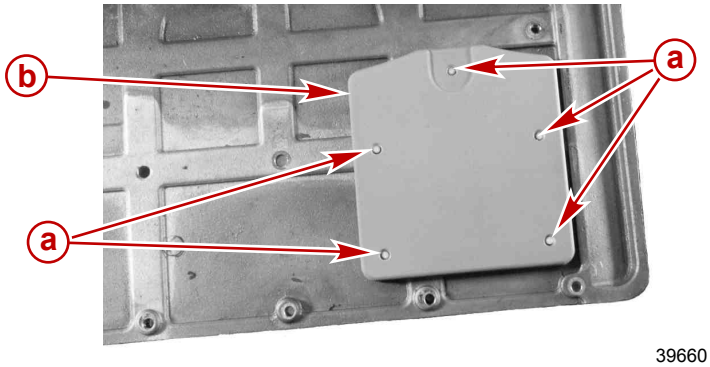
41251

Trim tab anodes

Replacing

IMPORTANT: The trim tab cylinder is equipped with a check valve to avoid the lowering of the trim tab after shut down. When service is required lower the trim tab before shutting the engine down.

1. Completely lower the trim tab.
2. Remove the five trim tab anode attaching screws on each anode from the bottom of the trim tab.



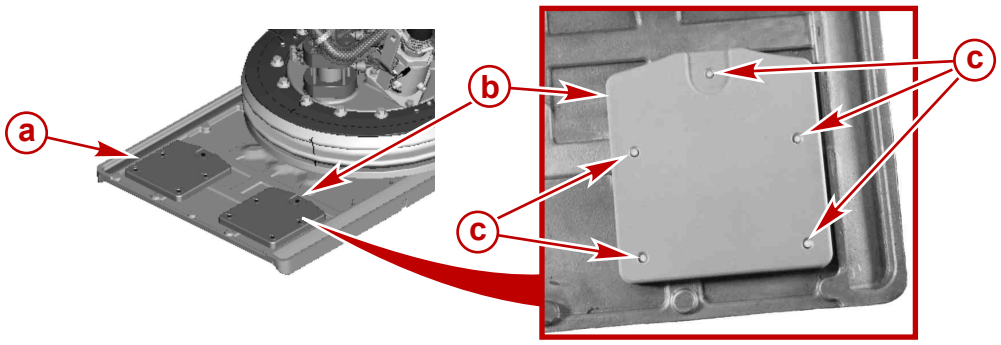
39660

Removing the starboard anode
a - Screw (5)
b - Anode

3. Inspect and replace any trim tab anode mounting screws damaged by corrosion.
4. Remove and discard the trim tab anode.
5. Clean the trim tab anode mounting surfaces to bare metal.
6. Apply adhesive to the threads of the five trim tab anode screws.

Tube Ref No.	Description	Where Used	Part No.
7	Loctite 271 Threadlocker	Trim tab anode screw	92-809819

7. Install the anodes on the trim tab. Tighten the screws to specification.



41252

a - Port anode
b - Starboard anode
c - Screws (5)

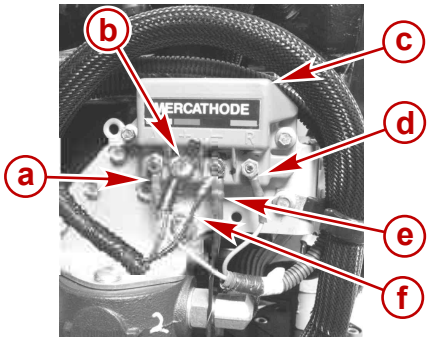
Description	Nm	lb-in.	lb-ft
Trim tab anode screw (M8 x 20 mm long)	27	–	20

Continuity Circuits

NOTE: *Refer to the operation and maintenance manual provided by the boat manufacturer for maintenance information about vessel mounted anodes and related continuity circuits.*

The drive system is equipped with ground circuit wires to ensure good electrical continuity between the drive components. Good continuity to a ground (–) is essential for the anode and MerCathode system to function most effectively.

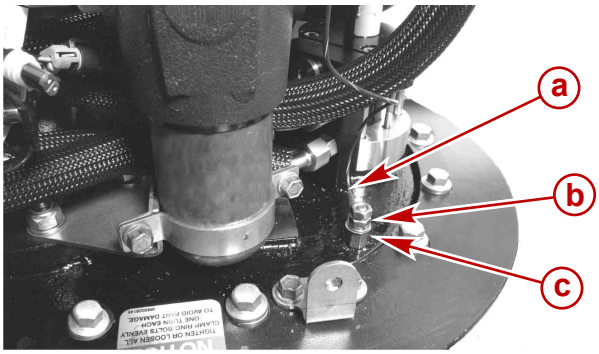
1. Remove the drive cover. Refer to **Removing the Drive Cover** in this section.
2. Inspect the MerCathode controller and wires for loose connections, broken connectors, or frayed wiring.



41253

a - Anode wire
b - Battery positive (+) terminal wire
c - MerCathode controller
d - Reference electrode wire
e - Black/green continuity wire (–) to bonding stud
f - Battery negative (–) terminal wire

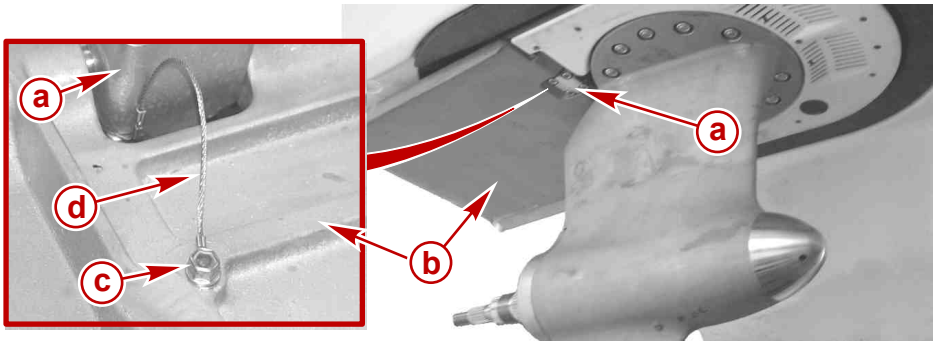
3. Inspect the bonding stud, nut, and continuity wire (–) on the center section for corrosion, loose connections, broken connectors, or frayed wiring.



41261

a - Black/green continuity wire
b - Nut
c - Bonding stud

4. At the specified interval, with the boat out of the water, lower the trim tabs and inspect the continuity wire (–) located between the trim tab and the hinge block.



41262

a - Hinge block
b - Trim tab
c - Screw
d - Continuity wire

Inhibiting Corrosion

In addition to the corrosion protection devices, follow these steps to inhibit corrosion:

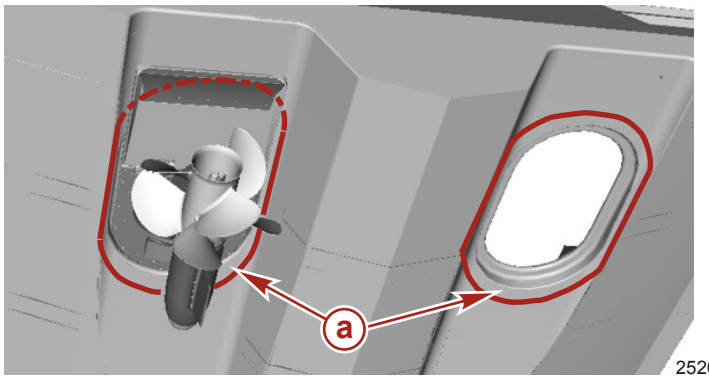
1. Paint your power package. Refer to **Painting the Boat**.
2. Spray power package components on the inside of the boat annually with Corrosion Guard to protect the finish from dulling and corrosion.
3. Keep all lubrication points well lubricated.

Painting the Boat

IMPORTANT: The limited warranty does not cover corrosion damage as a result of improper paint application.
IMPORTANT: Paint renders anodes and the MerCathode system ineffective as inhibitors of galvanic corrosion.

When painting the boat hull with anti-fouling paint, observe the following:

- Use high-quality, anti-fouling paint designed for marine use.
- Avoid using anti-fouling paint that contains copper material, which could conduct electrical current.
- If using copper-based or tin-based paints is necessary, ensure that you comply with all local and federal laws prohibiting their use.
- Do not paint drain holes or items as specified by the boat manufacturer.
- Do not paint any anodes or the MerCathode system components.
- Avoid any electrical interconnection between the paint and drive, anodic blocks, trim tab anodes, or MerCathode system by allowing a minimum of 40 mm (1-1/2 in.) unpainted area on the hull of the boat around these items and as shown in the following figure.



Unpainted area

a - Minimum unpainted 40 mm (1-1/2 in.) area around the interface ring seal (grommet) on models with a molded-in tunnel opening or around the bolt-on interface ring assembly (if equipped)

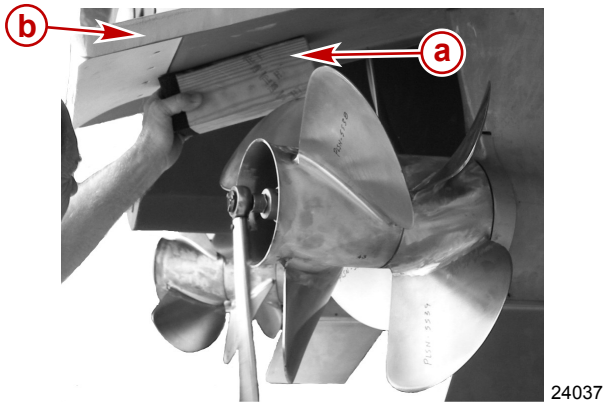
Propellers

Propeller Removal

⚠ WARNING

Rotating propellers can cause serious injury or death. Never operate the boat out of the water with a propeller installed. Before installing or removing a propeller, remove the key from the key switch, place the drive in neutral, and engage the E-stop switch to prevent the engine from starting.

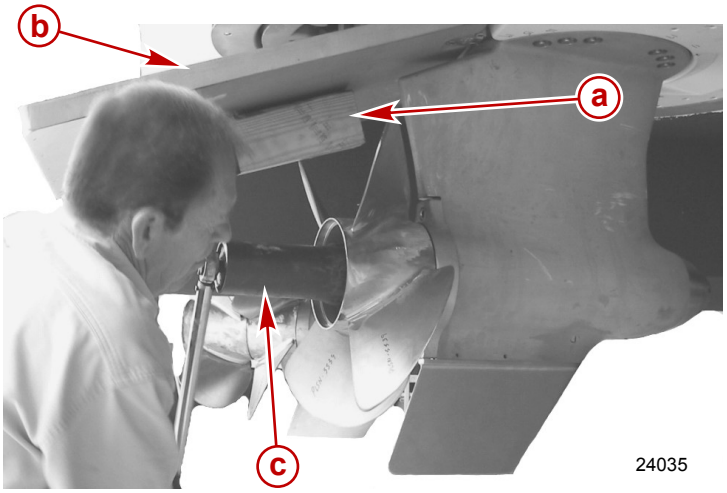
1. Place a block of wood between the rear propeller blade and the trim tab.
2. Turn the rear propeller nut counterclockwise to remove the nut.



a - Block of wood
b - Trim tab

3. Slide the propeller and thrust hub off of the propeller shaft.

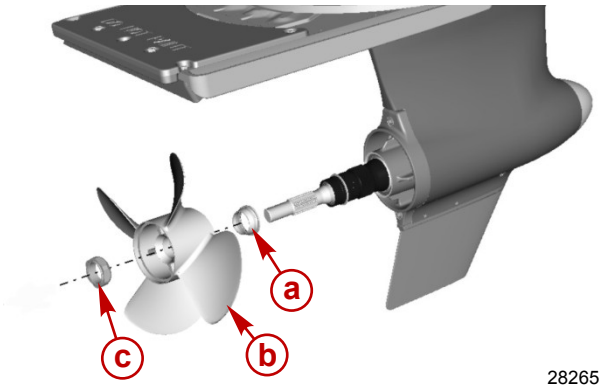
4. Using the propeller nut tool, turn the front propeller nut counterclockwise and remove the nut.



a - Block of wood
b - Trim tab
c - Propeller nut tool

Propeller Nut Tool	91-805457T 1
 10677	Aids in the removal and installation of the front propeller nut.

5. Slide the front propeller and the front thrust hub off the propeller shaft.



a - Front thrust hub
b - Front propeller
c - Front propeller nut

Propeller Repair

Some damaged propellers can be repaired. Contact your Mercury Diesel authorized repair facility.

Propeller Installation

⚠ WARNING

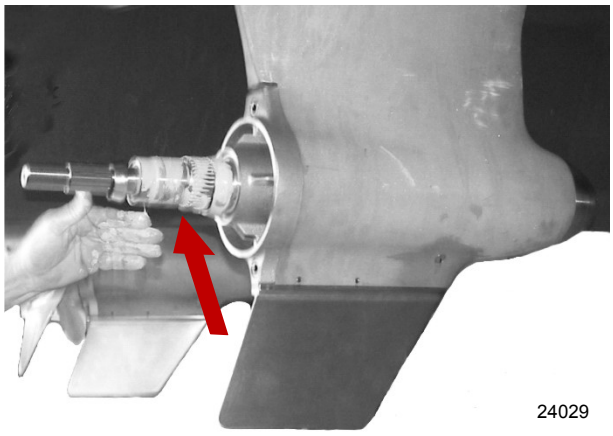
Rotating propellers can cause serious injury or death. Never operate the boat out of the water with a propeller installed. Before installing or removing a propeller, place the drive unit in neutral and engage the lanyard stop switch to prevent the engine from starting. Place a block of wood between the propeller blade and the anti-ventilation plate.

1. Liberally coat the propeller shaft spline with one of the following Quicksilver lubricants.

NOTE: *Anti-corrosion grease is for saltwater applications only.*

Tube Ref No.	Description	Where Used	Part No.
34	Special Lubricant 101	Propeller shaft splines	802859A1
95	2-4-C with PTFE	Propeller shaft splines	92-802859A 1

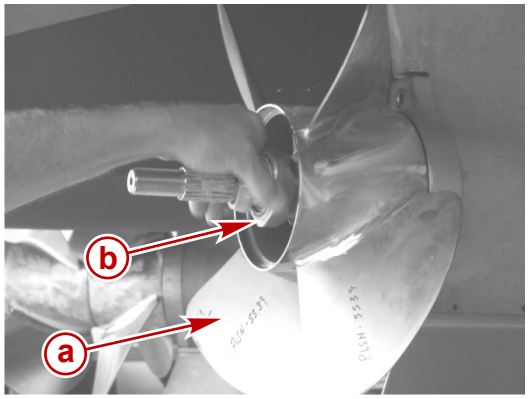
Tube Ref No.	Description	Where Used	Part No.
94	Anti-Corrosion Grease	Propeller shaft splines	Obtain Locally



Lubricating the propeller shaft splines

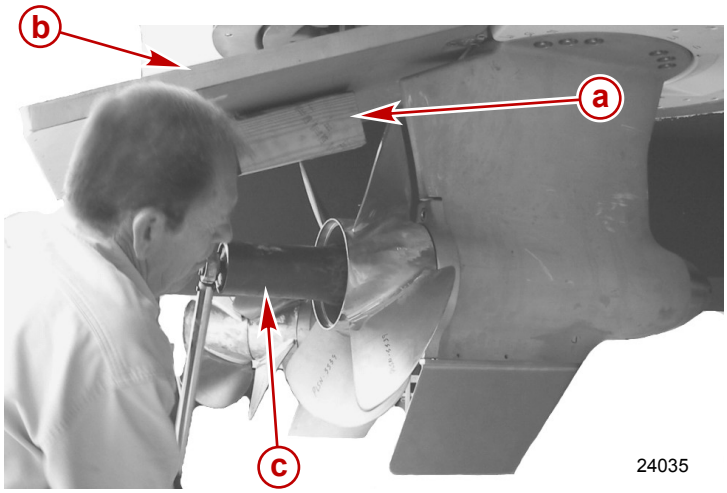
IMPORTANT: Check that both the front and aft propeller part numbers match for port and starboard drives.

2. Slide the front thrust hub onto the propeller shaft with the tapered side toward the propeller hub.
3. Align the splines and place the front propeller on the propeller shaft. The propeller must fit freely on the propeller shaft splines.
4. Install the front propeller nut.



a - Front propeller
b - Nut

5. Place a block of wood between the trim tab and the propeller.
6. Tighten the front propeller nut to specification using the propeller nut tool.

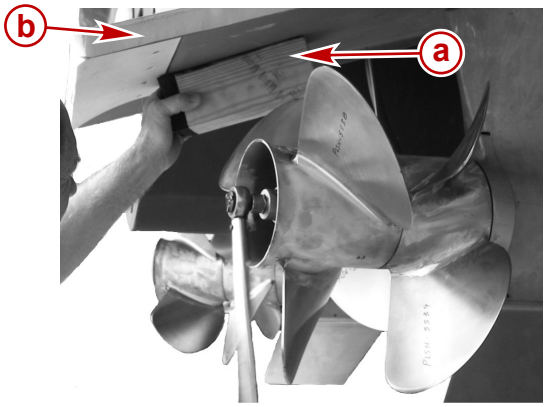


a - Block of wood
b - Trim tab
c - Propeller nut tool

Propeller Nut Tool	91-805457T 1
 10677	Aids in the removal and installation of the front propeller nut.

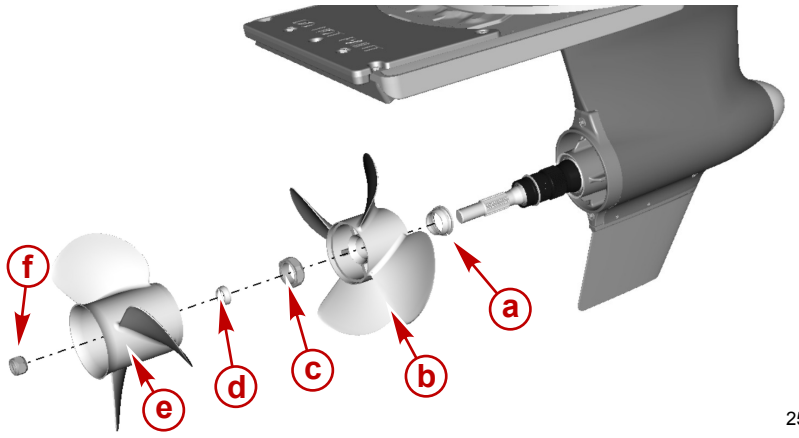
Description	Nm	lb. in.	lb. ft.
Front propeller nut	136	–	100

7. Check the propeller for rotation. The propeller must not contact the lower drive housing.
8. Slide the rear thrust hub onto the propeller shaft with the tapered side toward the propeller hub.
9. Align the splines and place the rear propeller on the propeller shaft. The propeller must fit freely on the propeller shaft splines.
10. Install the rear propeller nut.
11. Place a block of wood between the trim tab and the propeller.
12. Tighten the rear propeller nut to specification.



24037

a - Block of wood
b - Trim tab



25876

Zeus drive propeller assembly
a - Front thrust hub
b - Front propeller
c - Front propeller nut
d - Rear thrust hub
e - Rear propeller
f - Rear propeller nut

Description	Nm	lb. in.	lb. ft.
Rear propeller nut	81	–	60

Section 6 - Storage

Table of Contents

6

Storage Descriptions

IMPORTANT: We strongly recommend that this service be performed by a Mercury Marine authorized repair facility. Damage caused by freezing is not covered by the Mercury Marine Limited Warranty.

NOTICE
Water trapped in the seawater section of the cooling system can cause corrosion or freeze damage. Drain the seawater section of the cooling system immediately after operation or before any length of storage in freezing temperatures. If the boat is in the water, keep the seacock closed until restarting the engine to prevent water from flowing back into the cooling system. If the boat is not fitted with a seacock, leave the water inlet hose disconnected and plugged.

NOTE: *As a precaution, attach a tag to the key switch or steering wheel of the boat to remind the operator to open the seacock or unplug and reconnect the water inlet hose before starting the engine.*

The power package must be protected from freeze damage, corrosion damage, or both types of damage during storage. Storage is any length of time the product is not operated. Based on the length of storage certain precautions and procedures must be observed to protect the power package.

Freeze damage can happen when water trapped in the seawater cooling system freezes. For example, after operating the boat, exposure to freezing temperatures for even a brief period of time could result in freeze damage.

Corrosion damage is the result of saltwater, polluted water, or water with a high mineral content trapped in the seawater cooling system. Saltwater should not stay in an engine's cooling system for even a brief storage time; drain and flush the seawater cooling system after each outing.

Freezing weather (freezing temperature) operation refers to operating the boat whenever freezing temperatures are possible. Likewise, freezing weather storage refers to whenever the boat is not being operated and freezing temperatures are possible. In such cases, the seawater section of the cooling system must be completely drained immediately after operation.

Seasonal storage refers to when the boat is not being operated for one month or more. The duration varies according to the geographic location. Seasonal storage precautions and procedures include all the steps for freezing weather storage and some additional steps that must be taken when storage will last longer than the short time of freezing weather storage.

Drive Storage

Cold Weather (Freezing Temperature) Storage

IMPORTANT: Mercury Marine strongly recommends that this service is performed by an authorized repair facility. Damage caused by freezing is not covered by the Limited Warranty.

1. Remove the boat from the water if possible.
2. Drain the seawater section of the cooling system. Read all precautions and perform all procedures found in **Section 5– Draining the Seawater System**.
3. Place a caution tag at the helm advising the operator to open the seacocks before operating the boat.

Seasonal and Extended Storage Instructions

IMPORTANT: Mercury Diesel strongly recommends that this service be performed by an authorized repair facility.

1. Remove the boat from the water if possible.
2. Read all precautions and perform all procedures found in **Cold Weather (Freezing Temperature) Storage** section.
3. Perform all maintenance specified for completion under the interval of Every 500 Hours or Once a Year (Whichever Occurs First) in **Maintenance Schedules**.

   NOTE: *For seasonal or extended storage, we recommend flushing the seawater cooling system to avoid salt or silt buildup. Contact your Mercury Diesel authorized repair facility for additional information.*
4. Clean the outside of the drive and engine. Paint any areas as required with the specified primer and spray paint. After the paint has dried, coat the outside of the drive and engine with the specified corrosion inhibiting oil or equivalent.

Description	Where Used	Part Number
Light gray primer	Outside of engine and drive	92-802878 52
Mercury Phantom Black	Outside of drive components when painted black	92-802878Q1
Marine Cloud White paint	Outside of engine	8M0071082
Corrosion Guard	Outside of engine and drive	92-802878 55

Battery Storage

Whenever the battery will be stored for an extended period of time, be sure the cells are full of water and the battery is fully charged and in good operating condition. It should be clean and free of leaks. Follow the battery manufacturer's instructions for storage.

Recommissioning

Engine

NOTE: *Discharge of propylene glycol into the environment may be restricted by law. Contain and dispose of propylene glycol in accordance with federal, state, and local laws and guidelines.*

1. On engines that were prepared for cold weather (freezing temperature) or seasonal storage, drain the propylene glycol into a suitable container. Dispose of the propylene glycol in accordance with federal, state, and local laws and guidelines.
2. Refer to the appropriate service manual for recommissioning procedures specified by the Mercury Diesel.

Drive

1. Perform all maintenance specified for completion under the interval of Every 500 Hours or Once a Year (Whichever Occurs First) in **Section 5—Maintenance** except items that were performed at the time of drive layup.
2. Check all fluid levels before first use.

Power Package

⚠ CAUTION

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

1. Install a fully charged battery. Clean the battery cable clamps and terminals. Reconnect the cables (see the CAUTION listed above). Secure each cable clamp when connecting. Coat terminals with a battery terminal anti-corrosion spray to help retard corrosion.

NOTICE

Without sufficient cooling water, the engine, the water pump, and other components will overheat and suffer damage. Provide a sufficient supply of water to the water inlets during operation.

2. Open the seacocks.
3. If the boat is not in the water, supply cooling water to the water inlet openings.
4. Start the engine and closely observe the instrumentation and system view panel. Ensure that all systems are functioning correctly.
5. Refer to the Marine Operation and Maintenance Manual for your engine, available from the engine manufacturer, and carefully inspect the engine for fuel, oil, fluid, water, and exhaust leaks.
6. Carefully inspect the drive for lubricant, fluid, water, and exhaust leaks.
7. Check the steering system, the ERC shift control and throttle control, and the joystick for proper operation.
8. Check all lubricant and fluid levels after first use.

Notes:

Section 7 - Troubleshooting

Table of Contents

7

Diagnosing Electronically Controlled Fuel System Problems

Your Mercury Diesel authorized repair facility has the proper service tools for diagnosing problems on electronically controlled fuel systems. The engine control module (ECM) on these engines has the ability to detect some problems with the system when they occur, and store a trouble code in the ECMs memory. This code can then be read later by a service technician using a special diagnostic tool.

Electrical Connections

IMPORTANT: To avoid damage to the electrical system, refer to the following precautions when working on or around the electrical harness or when adding other electrical accessories.

- **Do not tap accessories into the engine harness.**
- **Do not puncture wires for testing (probing).**
- **Do not reverse the battery leads.**
- **Do not splice wires into the harness.**
- **Do not route harness near sharp edges, hot surfaces, or moving parts.**
- **Fasten cables away from sharp edges, fasteners, or objects that could wear into the harness or pinch the harness.**
- **Avoid sharp bends in a data harness. Minimum bend radius should be 76 mm (3 in.) for installation.**
- **Fasten harnesses to the boat at least every 45.7 cm (18 in.), using appropriate fasteners.**
- **Do not attempt diagnostics without the proper, approved service tools.**
- **Disconnect all the negative (–) and positive (+) battery cables from each battery before electric arc welding on the vessel. Attach the welder ground cable no more than 0.61 m (2 ft) from the part being welded. Do not connect the ground cable of the welder to any ECM cooling plate or ECM. To avoid damage to the engine or drive and related components, welding on the engine, drive, or engine and drive mounted components is not recommended.**

Troubleshooting Charts

Troubleshooting Engine Related Problems

Troubleshooting engine related problems may require information not found in these troubleshooting charts. Additional troubleshooting information can be found in the owners manual for the engine. Refer to the appropriate **Marine Recreational High Output Propulsion Units QSB or QSC Operation and Maintenance Manual** provided with the engine.

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.

Poor Performance

Symptom	Remedy
Throttle not operating properly.	Check that the Cruise Control is disengaged. Turn off Troll or Dock functions on DTS control pad. Refer to Special Digital Throttle and Shift (DTS) Features.
Damaged or improper propeller.	Replace the propeller. See a Mercury Diesel authorized repair facility.
Excessive bilge water.	Drain and check for the cause of entry.
Boat overloaded or load improperly distributed.	Reduce the load or redistribute the load more evenly.
Boat bottom fouled or damaged.	Clean or repair as necessary.
Tabs locked in the down position.	Unlock the automatic tab override switch.
Poor quality of fuel.	Use a cetane booster as recommended by a Mercury Diesel authorized repair facility.
Water in the fuel.	Run out fuel and fill with fresh fuel. The fuel filter may need to be drained or changed several times during this process.
Engine or electronic fuel system fault.	Have the engine or electronic fuel system checked by a Mercury Diesel authorized repair facility.

Symptom	Remedy
Guardian fault code set.	Check VesselView for Guardian fault codes that cause engine power reduction. If found, have the system checked by a Mercury Diesel authorized repair facility.

Joystick

Symptom	Remedy
Joystick does not control boat.	Both remote control levers are not in neutral. Put the remote control levers in neutral.
	One or both engines are not running. Start engine or engines.
Response to joystick inputs are erratic, or joystick operates independent of input.	Ensure there are no radios or other sources of electronic or magnetic interference near the joystick.
Joystick does not function properly and a fault code is set.	Check VesselView for Guardian fault codes that cause engine power reduction. If found, have the system checked by a Mercury Diesel authorized repair facility.
Joystick does not work—No fault code set, cruise control engaged.	Disengage cruise control.

Electronic Remote Controls

Symptom	Remedy
ERC (electronic remote control) lever is too hard or too easy to get out of neutral detent.	Adjust detent tension. Refer to **Section 2 - Dual-Handle Electronic Remote Control (ERC)—Features and Operation**.
ERC lever moves too hard or too easy through its range of motion.	Adjust handle tension screw. Refer to **Section 2 - Dual-Handle Electronic Remote Control (ERC)—Features and Operation**.
ERC lever increases engine RPM, but does not engage gears and boat does not move.	Key off and key on.
	Check "Throttle Only" button on DTS trackpad. Put ERC levers in neutral and push the button to disengage, if the light is on.
	Check transmission fluid level and fill if necessary. Refer to **Section 5 - Maintenance**.
	Engage gears manually. Refer to **Section 3 - Gear Engagement—Emergency Procedure**.
	Contact a Mercury Diesel authorized repair facility.
ERC lever controls engine and drive, but does not reach wide-open throttle.	If engine only reaches 50% of WOT, check "DOCKING" button on DTS trackpad. Put handles in neutral and push button to disengage, if light is on.
	Check VesselView to see if cruise control enabled. Disable cruise control.
	Check propeller for damage. Consult your Check VesselView for Guardian fault codes that cause engine power reduction. If found, have the vessel checked by a Mercury Diesel authorized repair facility to discuss if propellers need to be changed.
	Unlock the Automatic Tab Override switch or raise tabs.
ERC lever controls engine and drive, but does not respond in a linear manner.	Check "TROLL" button on DTS trackpad. Put handles in neutral and push "TROLL" button to disengage, if light is on.
	Check if dock mode or cruise control are on. Turn off or disengage, if on.
One ERC lever is moved, but both engines respond.	Check "1 LEVER" button on DTS trackpad. Put handles in neutral and push "1 LEVER" button to disengage, if light is on.
ERC control, joystick, and steering wheel do not function.	Restore helm control. Press "HELM" on DTS trackpad. (Multiple helm boats only.)

Steering System

Symptom	Remedy
Steering wheel operates without resistance, but steers boat.	Starboard key switch turned off. Turn starboard key switch on.
	Check and start starboard engine.
	Starboard harness circuit breaker tripped. Reset circuit breaker.
Steering wheel does not steer the boat.	For contingent operation, change to joystick for directional control. Contact a Mercury Diesel authorized repair facility.
	Check steering actuator fluid level and fill if necessary. Refer to **Section 5 - Maintenance**.
	Refer to **Contingent Operations, Steering and Trim—Manual Override** or contact a Mercury Diesel authorized repair facility.
Steering works, but boat is not as responsive.	Key off and key on.
	Check and start port engine.
	Check trim tab function.
	Check steering actuator fluid level and fill if necessary. Refer to **Section 5 - Maintenance**.
	Contact a Mercury Diesel authorized repair facility.
Steering wheel turned past end stop.	Key off and key on to restore steering wheel self-centering, cruise control, and to attempt to erase fault code.

Trim Tabs

Symptom	Remedy
Automatic trim tabs not working.	Turn off the trim tab override switch.
	Check steering actuator fluid level and fill if necessary. Refer to **Section 5 - Maintenance**.
	Contact a Mercury Diesel authorized repair facility.
Automatic trim tabs working, but erratic.	Check steering actuator fluid level and fill if necessary. Refer to **Section 5 - Maintenance**.
	Contact a Mercury Diesel authorized repair facility.

Boat Response Changes

Symptom	Remedy
Boat response sluggish.	Verify all engines are on and functioning properly. Start any stopped engine.
	Check VesselView for fault codes.
	Check fuel quality.
	Check and drain the water separating fuel filter.
Boat vibrates or is slow to respond following a noise or impact.	1. Shut down engines and check for damage in the engine room. 2. Check in the engine room or under the boat for damage to the drives. 3. Return to dock at reduced speed. 4. Contact a Mercury Diesel authorized repair facility if impact damage is found or suspected.
	1. Shut down engines. 2. Turn off and remove keys. 3. Check propellers for damage. If damaged, return to a Mercury Diesel authorized repair facility for repair or replacement.

Battery Will Not Charge

Possible Cause	Remedy
Excessive current draw from battery.	Turn off nonessential accessories, like the air-conditioning and hot water heater.
Loose or dirty electrical connections or damaged wiring.	Check all associated electrical connections and wires (especially battery cables). Clean and tighten faulty connections. Repair or replace damaged wiring.
	Ensure area around the ground connections is clean and making good metal-to-metal contact.
Alternator drive belt loose or in poor condition.	Replace or adjust belt.
Unacceptable battery condition.	Test battery.
Battery charge switch off.	Turn the battery charge switch on.
Shore power not on.	Check the condition of the connections, cables, and shore power supply. Repair or replace as necessary.

Gauges and Instrumentation

Possible Cause	Remedy
Gauges not working.	Key off and key on.
	Contact a Mercury Diesel repair facility.

Galvanic Isolator

Symptom	Possible Cause	Remedy
Red light on. One blink from green light.	Open capacitor in galvanic isolator.	Replace galvanic isolator.
Red light on. Two blinks from green light.	Shorted diode in galvanic isolator.	Replace galvanic isolator.
Red light on. Three blinks from green light.	Open diode in galvanic isolator.	Replace galvanic isolator.
Red light on. Four blinks from green light.	Open connection between galvanic isolator and monitor. Defective galvanic isolator. Defective monitor.	Check wiring. Replace galvanic isolator. Replace monitor.
Red and green light alternately blink.	Alternately open safety wire to shore. Open boat wire bonding.	Check wiring.
Green light on. Red light blinks once or twice per second.	AC fault current is being passed through safety wire (once per second-less than 8 A).	Check for improper AC polarity. Check for defective AC device.

Notes:

Section 8 - Customer Assistance Information

Table of Contents

8

Owner Service Assistance

Local Repair Service

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

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

Service Away From Home

If you are away from your local dealer and the need arises for service, contact the nearest authorized dealer. 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 inform the local authorities and Mercury Marine of the model and serial numbers and to whom the recovery is to be reported. This information is maintained in a database at Mercury Marine to aid authorities and dealers in recovery of stolen power packages.

Attention Required After Submersion

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

Replacement Service Parts

⚠ WARNING

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

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

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

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

Parts and Accessories Inquiries

Direct any inquiries concerning Quicksilver replacement parts and accessories to your local authorized dealer. The dealer has the necessary information to order parts and accessories for you. 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 MerCruiser 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 MerCruiser dealership. If you need additional assistance:

1. Talk with the dealership's sales manager or service manager. Contact the owner of the dealership if the sales manager and service manager have been unable to resolve the problem.
2. If your question, concern, or problem cannot be resolved by your dealership, please contact a 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 Customer Service:

- Your name and address
- Daytime telephone number

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

Contact Information for Mercury Marine Customer Service

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

United States, Canada		
Telephone	English +1 920 929 5040 Français +1 905 636 4751	Mercury Marine W6250 W. 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-shi Sakai-ku 5900984 Osaka, 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	

Customer Service Literature

English Language

English language publications are available from:
Mercury Marine
Attn: Publications Department
W6250 West Pioneer Road
P.O. Box 1939
Fond du Lac, WI 54935-1939

Outside the United States and Canada, contact the nearest Mercury Marine or Marine Power International Service Center for further information.

When ordering be sure to:

- List your product, model, year, and serial numbers.
- Check the literature and quantities you want.
- Enclose full remittance in check or money order (NO COD).

Other Languages

To obtain an Operation, Maintenance and Warranty Manual in another language, contact the nearest Mercury Marine or Marine Power International Service Center for information. A list of part numbers for other languages is provided with your power package.

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 54935-1939

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 West 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
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Section 9 - Predelivery Information

Table of Contents

9

Predelivery Information

IMPORTANT: This section of the Operation, Maintenance, and Warranty Manual guides our boat dealers and boat company service personnel in the proper initial (predelivery) service of the Mercury Diesel Zeus products. The Dealer Predelivery Checklist must be completed prior to delivery of the product to the customer and is not a substitute for the maintenance schedules listed in this manual. If you have not been trained in the recommended service procedures for this product, contact an authorized Mercury Diesel Distributor/Dealer technician to have the work performed. Improper predelivery checks, inspection, or servicing of this Mercury Diesel product could result in damage to the product or personal injury to those servicing and operating the product.

Dealer Predelivery Checklist for Zeus Products (Before Delivery to the Customer)

Before Starting—Key Off

Dealer Check	Checklist Item	Manual Code or Task
☐	Identification Record table listed on front page is filled out	ZOM
☐	Copy of all required support publications present	Visual Inspection
☐	Drive skegs and propellers are installed	Visual Inspection
☐	Engine mount and isolator mounting cap screws are tight	Visual Inspection
☐	Driveshaft and shields mount cap screws are tight	Visual Inspection
☐	All fuel connections are tight	Visual Inspection
☐	Raw water (seawater) system hose clamps are tight	Visual Inspection
☐	Exhaust system hose clamps are tight	Visual Inspection
☐	All electrical connections secure	Visual Inspection
☐	Coolant recovery bottle and expansion tank level—check/fill	QSB OM Section V
☐	Engine oil level—check/fill	QSB OM Section V
☐	Steering actuator and trim fluid level—check/fill	ZOM Section 5
☐	Transmission fluid level—check/fill	ZOM Section 5
☐	Drive gear lube fluid level—check/fill	ZOM Section 5
☐	Seacocks open (see Starting and Stopping the Engines)	ZOM Section 3

Before Starting—Key On

Dealer Check	Checklist Item	Manual Code or Task
☐	Audio warning horn chirp at key on	VVM Section 8
☐	Check the VesselView for fault codes	VVM Section 8
☐	Neutral lights on the ERC lever assembly	ZOM Section 3

Engines Running at the Dock

Dealer Check	Checklist Item	Manual Code or Task
☐	Key switch and/or start/stop buttons—operational check	ZOM Section 3
☐	Check seawater flow—visual check at bypass port	Visual Inspection
☐	Throttle only/gear lockout—operational check	ZOM Section 3
☐	Forward - Neutral - Reverse gear—operational check	ZOM Section 3
☐	Idle increase/decrease—operational check	ZOM Section 3
☐	E-Stop switch, if equipped—operational check	ZIM Section 2
☐	Exhaust leaks—visual check	Visual Inspection
☐	Fluid leaks—visual check	Visual Inspection
☐	Drive interface ring seal (sealing grommet)—visual check for leaks	Visual Inspection

Sea Trial

Dealer Check	Checklist Item	Manual Code or Task
☐	VesselView—functional check all operational modes	VVM Section 3
☐	Instrumentation—check	ZOM Section 2
☐	Joystick—functional check	ZOM Section 3
☐	Single lever—functional check	ZOM Section 3
☐	Trim tab operation—manual and automatic—check	ZOM Section 3
☐	Steering operations at all speed ranges—functional check	Visual Inspection
☐	Trolling—functional check	ZOM Section 3
☐	WOT RPM—check	Visual Inspection
☐	Auto heading—functional check	ZOM Section 3
☐	Auto heading course change—functional check	ZOM Section 3
☐	Skyhook—functional check	ZOM Section 3
☐	Waypoint tracking—functional check	ZOM Section 3

After On Water Test

Dealer Check	Checklist Item	Manual Code or Task
☐	Fluid leaks—monitor and document	Visual Inspection
☐	Oil and fluid levels—visual check	ZOM Section 5
☐	Drive interface ring seal (sealing grommet)—visual check for leaks	Visual Inspection
☐	Supply the customer with the engine owner's manual	–
☐	Supply the customer with the Zeus Operation, Maintenance, and Warranty Manual	–
☐	Supply the customer with the VesselView operations manual	–
☐	Supply the customer with the Captain's Briefing Information brochure	–
☐	Supply the customer with the Warranty Registration Card	–

Skyhook (if Equipped)

Dealer Check	Checklist Item	Manual Code or Task
☐	Verify the Skyhook helm label is properly displayed at the helm	–
☐	Verify the Skyhook passenger label is properly displayed for the passengers	–
☐	Supply the customer with the Skyhook Operation DVD	–
☐	Verify that the Skyhook Quick Reference Guide is attached to the helm	–