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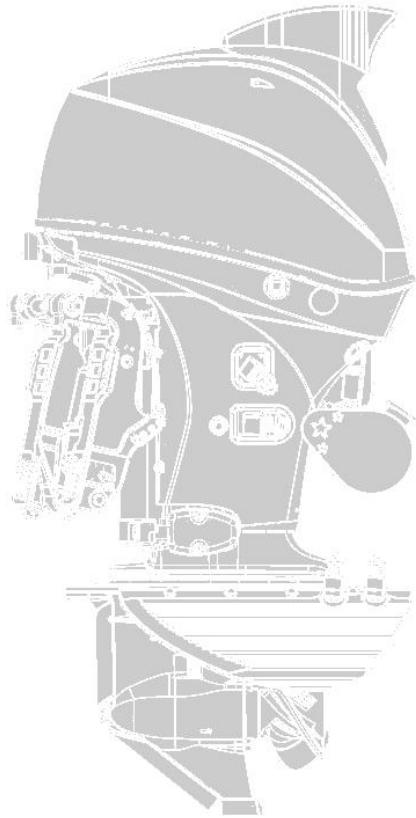
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Owner's Manual

Version 2.0

July 2025



Contact Information

Freedom Outboard

7385 Willowbrook Road, Victor, NY 14564

Phone: (888) 239-2628

Website: www.Freedom-Outboard.com

⚠ DANGER ⚠

**READ THIS MANUAL BEFORE USING THE
OUTBOARD MOTOR.**

**FAILURE TO FOLLOW THE INSTRUCTIONS
AND SAFETY PRECAUTIONS IN THIS
MANUAL CAN RESULT IN SERIOUS INJURY
OR DEATH.**

**KEEP THIS MANUAL IN A SAFE LOCATION
FOR FUTURE REFRENCE.**

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1. General Information

1.1. Your Freedom Outboard Motor

To You, Our Customer

Thank you for choosing Freedom Outboard for your boating needs. Before you hit the waters and adventure to places no other motor has gone, please read this manual in its entirety. Familiarizing yourself with the motor maintenance as well as the cooling system will help ensure that you are venturing into the great unknown for years to come. If a problem arises that cannot be solved through the troubleshooting section of this manual, please contact Freedom Outboard for assistance.

All information in the manual is based upon the most current adaptation of Freedom Outboard's 40hp-60hp line at the time of printing.

Freedom Outboard reserves the right to make changes at any time without notice and without incurring any obligation.

This manual plays an important part in keeping the motor fully functional for as long as possible. Please keep the manual intact and ensure the manual remains with the motor when purchased or given to other users.

Freedom Outboard

1.2. Warranty Information

All Freedom Outboard motors are covered by a limited warranty. Refer to the Freedom Outboard Warranty for details.

www.Freedom-Outboard.com

In the space below, please record the outboard motor's serial number. The serial number will be needed when ordering parts, and when making technical or warranty inquiries.

See *Serial Number* pg. 3-11 for Serial number locations

Serial Number:	Date of Purchase:

1.3. Owner Registration and Identification

Upon purchasing this product, the Freedom Outboard Authorized Dealer is responsible for registering your outboard motor with Freedom Outboard. This identifies you as the legal owner of the product and serves as your warranty registration. If the motor is transferred, you are responsible for contacting Freedom Outboard to update the legal owner's contact information. See Freedom Outboard Warranty for more information.

1.4. Pre-Delivery Inspection

Verify the Pre-delivery inspection has been properly completed by the Freedom Outboard Authorized Dealer and you have received a completed and signed copy of the Pre-delivery inspection (PID) form.

1.5. Service and Maintenance

Your personal safety and that of your passengers depends on how well you maintain your outboard motor. Proper care and safe operation of this outboard motor is required for optimal performance and use of your outboard motor.

As the owner, it is highly recommended that you become familiar with correct inspection and maintenance procedures and timelines. See *Inspection Schedules* pg. 9-1 and *Maintenance* pg. 10-1. Review safety checks and engine storage requirements outlined in this manual.

Print out the last two pages of this owner's manual for a Maintenance Log that may be used to keep track of maintenance and repairs. See *Maintenance Log* pg. 13-1.

Use a Freedom Outboard Authorized Service shop for service, maintenance, repairs and warranty work on this outboard motor.

Use only recommended parts and lubricants.

See *Service Replacement Specifications* pg. 3-17.

2. Safety Information

2.1. Hazard and User Notifications

The following is a list of the different levels of user notifications that are used in this manual.

DANGER

The information provided indicates potential for serious bodily harm or death if the notification instructions are not followed!

 **WARNING:** The information provided indicates potential for moderate bodily harm if the notification instructions are not followed.

CAUTION: The information provided indicates the potential for minor to superficial (mild) bodily harm if the notification instructions are not followed.

IMPORTANT: The information provided indicates the potential for damage to the equipment if the notification instructions are not followed. This notice may also provide the reader with critical information which should be followed to ensure successful completion of the related procedure.

NOTE: Helpful information provided to the reader based on level of importance which will ensure best results or efficiency or provide the reader with information that they should be aware of.

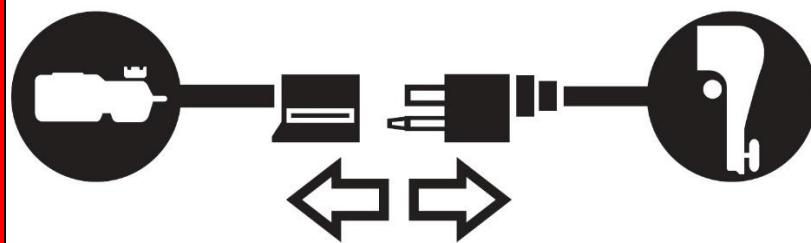
2.2. Gasoline and Engine Exhaust Safety

Gasoline or Engine exhaust may occur during operation, servicing, or maintenance. Review the information below as well as all safety notices included in individual procedures. Always follow all fuel handling procedures and precautions detailed here and in individual procedures included in this manual.

⚠ DANGER – Fuel Leakage ⚠

Fuel leakage can cause fire or explosion, potentially leading to severe injury or loss of life. Every fuel system part should be checked periodically, especially after long term storage, for fuel leaks, change of hardness of rubber, and expansion and/or corrosion of metals. In case any indication of fuel leakage or degradation of fuel parts are found, replace relevant parts immediately before continuing operation.

Disconnect the fuel connector except when operating engine.



⚠ DANGER – Closed Areas ⚠

DO NOT operate the outboard motor in closed areas or in areas with no forced ventilation. Exhaust gas emitted by this outboard motor contains carbon monoxide that may cause death or other health problems if inhaled continuously. Inhaling the gas initially causes symptoms such as feeling of sickness, drowsiness and headache.

⚠ DANGER – Refueling ⚠

Static electricity may ignite the gasoline vapor during refueling. Before refueling remove the static electricity charged in your body.

DO NOT smoke while refueling.

Stop the engine, and do not start the engine during refueling

IMPORTANT: Use of improper gasoline can damage your engine. Engine damage resulting from the use of improper gasoline is considered misuse of the engine. Damage caused thereby will not be covered under the limited warranty. See *Service Replacement Specifications* pg. 3-17 for gasoline requirements. See *Gasolines Containing Ethanol* pg. 3-18 for engine damages from ethanol exposure.

2.3. Battery Hazards

Battery hazards may be present during servicing or maintenance. Batteries are purchased separately. Refer to the battery manufacturer's recommendations, procedures and safety information as well as the general guidelines listed below and included in individual procedures.

⚠️ WARNING: Battery electrolyte contains sulfuric acid and thus is hazardous, causing a burn if it comes in contact with your skin, or poisonous if swallowed.

- Keep battery and electrolyte away from reach of children.
- When handling the battery, be sure to:
- Read all warnings shown on the battery case.
- Prevent electrolyte from coming in contact with any part of your body. Contact can cause serious burn or, if it comes in contact with your eye, loss of sight. Use safety glasses and rubber gloves.

In case battery electrolyte comes in contact with:

- Skin, flush thoroughly with water.
- Eye, flush thoroughly with water, and then seek immediate medical treatment.

In case battery electrolyte is swallowed: Seek immediate medical treatment.

⚠️ WARNING: Battery generates explosive hydrogen gas. Be sure to:

- Charge the battery in a well-ventilated area.
- Place the battery away from any source of fire, sparks and open flames such as burners or welding equipment.
- Do not smoke near the battery when the battery is charging.

2.4. Safe Boat Operation

As the operator/driver of the boat, you are responsible for the safety of those aboard and those in other boats around yours. You should be thoroughly knowledgeable on the correct operation of the boat, outboard motor, and accessories.

To learn about the correct operation and maintenance of the outboard motor, please read through this manual carefully.

Safe boating includes personal flotation devices and emergency equipment. Always follow state and federal guidelines for safe boating. Visit the United States Coast Guard Safety Afloat website for recreational boating safety information www.uscgboating.org.

NOTE: Commercial safety regulations and guidelines may differ.

A stop switch lock is provided with this motor. When disconnected, the boat engine stops immediately. The stop switch lanyard is designed for secure attachment to the operator or to the operator's PFD (Personal Flotation Device). See *Safety Lanyard & Emergency Stop Switch* pg. 6-1 for more information.

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3. Specifications

3.1. Engine Specifications

Freedom Outboard motors are power rated in accordance with ISO8665 (propeller shaft output).

Item	Measurement	MFS 40/50/60A		
		Remote Control	Multi-function tiller handle	
Model Designation		F 40A ETL	F 50A ETL	F 60A ETL
Model Generation			A and up	
Overall Length	mm (in)	783 (30.8)	1434 (56.5)	
Overall Width	mm (in)		404 (15.9)	
Overall Height	mm (in)		L: 1390 (54.7)	
Shaft Length	Mm (in)		L: 50.8 (20)	
Transom Height	mm (in)		L: 538 (21.2)	
Weight w/propeller	L kg (lb)	40A/50A: 98.5 (217)	60A: 100 (220)	40A/50A: 103.5 (228) 60A: 105 (231)
Engine Type: F		4-Stroke fuel injection		
Number of Cylinder		3		
Piston Displacement	cm ³ (cu.in.)	866 (52.8)		
Bore x Stroke	mm (in)	70 x 75 (2.75 x 2.95)		
Max. Output	kW (PS)	40A: 29.4 (40)	50A: 36.8 (50)	60A: 44 (60)
Max. Operating Range	min ⁻¹ (rpm)	5000–6000		
Idle Speed	min ⁻¹ (rpm)	850		
Exhaust System		Through hub exhaust		
Lubrication System		Wet sump (Trochoid pump)		
Cooling System		Closed Loop		
Starting System		E: Electric Start motor		
Ignition System		Battery ignition		
Alternator		12V - 25A		
Steering angle	Degree	70		
Tilt System		T: Power Trim and Tilt		
Trim angle @ -12°	Degree	-4 -8		
Trim position		4		
Tilt up angle @ -12°	Degree	62		
Gear shift		Dog clutch (F-N-R)		
Gear Reduction Ratio		2.08 (27:13)		
Emission Control System		MFI (Multiport Fuel Injection)		
Operator Sound Pressure (ICOMIA 39/94 Rev.1) dB (A)		40A/50A: 81.8		60A: 84.7
Hand Vibration Level (ICOMIA 38/94 Rev.) m/s ²		--	40A/50A: 2.9	60A: 3.5

3.2. Accessories Box

The following is a list of the tools and spare parts provided with the motor.

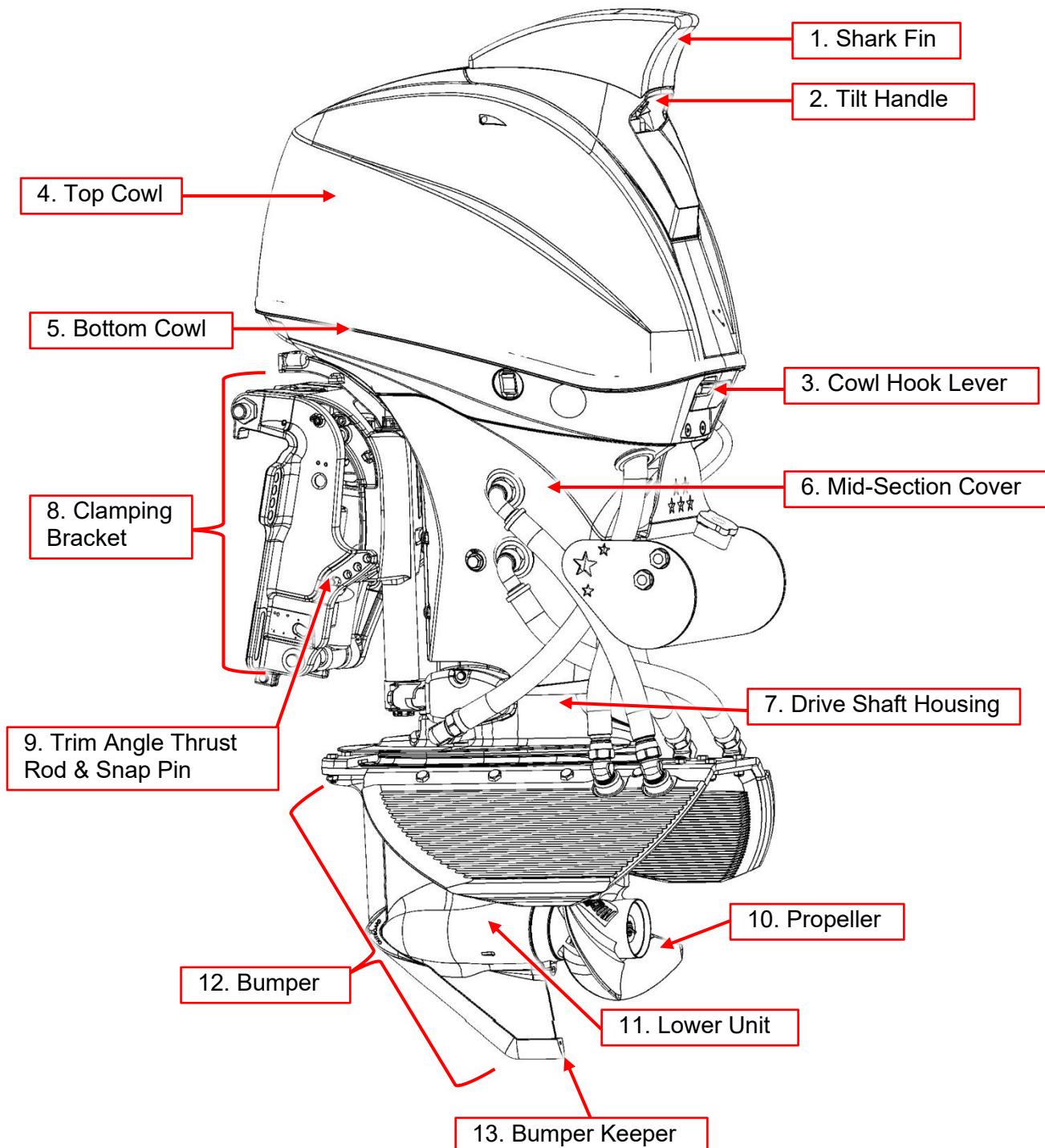
Items	Quantity	Remark
Socket wrench 16	1	Black Tool bag
Socket wrench 10-13	1	
Socket wrench handle	1	
Pliers	1	
Cross/Flat Double head screwdriver	1	
Emergency starter rope	1	
Spare stop switch lock	1	
Propeller nut split pin	1	
Rigging bolt set	4	Hex Bolts M12 P1.25 x 105 mm
	4	Washer 13-34-3
	4	Washer M12
	4	Nut M12 P1.25
Cable joint set	2	Cable joint
	2	Washer 8.5-18-1.6
	2	Snap pin
Remote control fitting assy	1	Drag link assy
	1	Steering hook plate
	2	Bolt M10
	2	Washer M10

3.3. Engine Part Names List

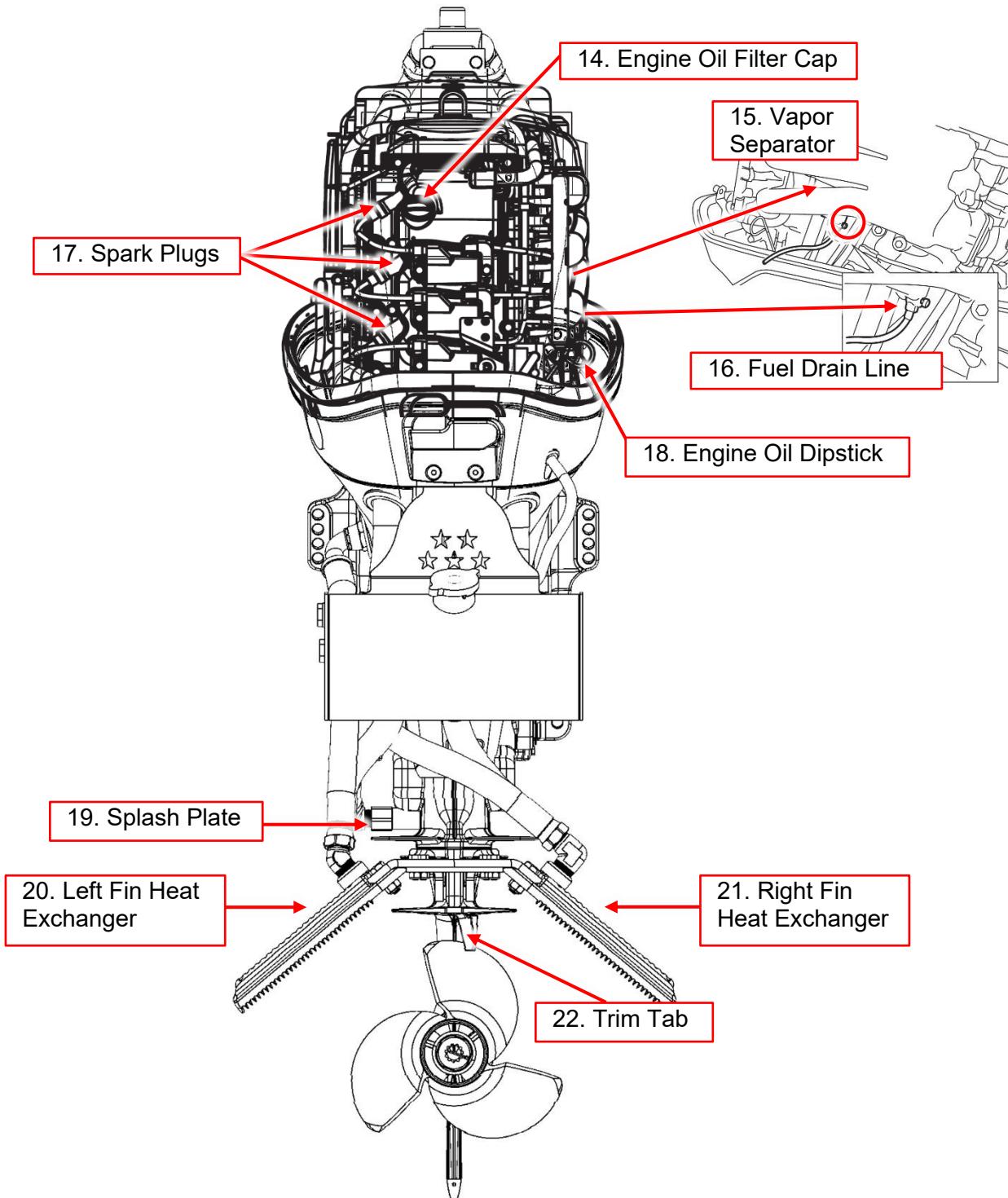
- For Anode locations, see *Anode Inspection* pg. 10-30.
- For Ground Wire locations, see *Ground Wire Inspection* pg. 10-33.
- For Grease Points, see *Grease Points* pg. 10-34.
- For Side Mount RC Part Names, see *Side Mount RC Part Names* pg. 3-7.
- For Top Mount RC Part Names, see *Top Mount RC Part Names* pg. 3-8.
- For Multi-Function Tiller Handle Part Names, see *Multi-Function Tiller Handle Part Names* pg. 3-9.
- For Fuel Tank Part Names, see *Fuel Tank Part Names* pg. 3-10.

See Engine Part Names 1 pg. 3-4		See Engine Part Names 2 pg. 3-5		See Engine Part Names 3 pg. 3-6	
1	Shark Fin	14	Engine Oil Filter Cap	23	Coolant Pump
2	Tilt Handle	15	Vapor Separator	24	Fuses
3	Cowl Hook Lever	16	Fuel Drain Line	25	Engine Oil Filter
4	Top Cowl	17	Spark Plugs	26	Battery & Fuel Line Connections
5	Bottom Cowl	18	Engine Oil Dipstick	27	Fuel Filter
6	Mid Section Cover	19	Splash Plate	28	PTT Switch
7	Drive Shaft Housing	20	Left Fin Heat Exchanger	29	PTT Manual Relief Valve
8	Clamping Bracket	21	Right Fin Heat Exchanger	30	Coolant Drain
9	Trim Angle Thrust Rod & Snap Pin	22	Trim Tab	31	Coolant Cap
10	Propeller			32	Sight Glasses
11	Lower Unit			33	Coolant Tank
12	Bumper			34	Engine Oil Drain Bolt
13	Bumper Keeper			35	Upper Gear Oil Plug
				36	Lower Gear Oil Plug

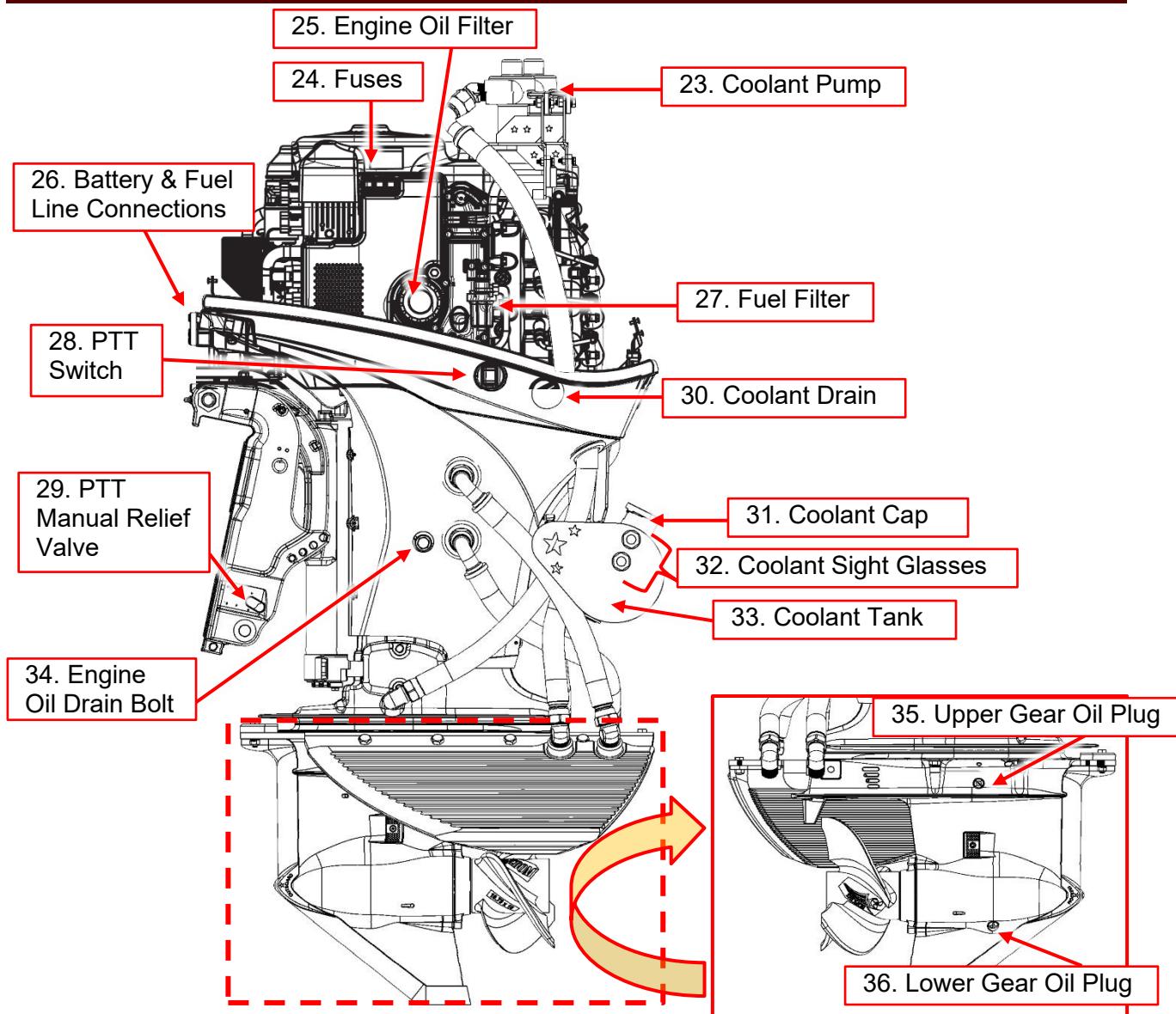
3.4. Engine Part Names 1



3.5. Engine Part Names 2



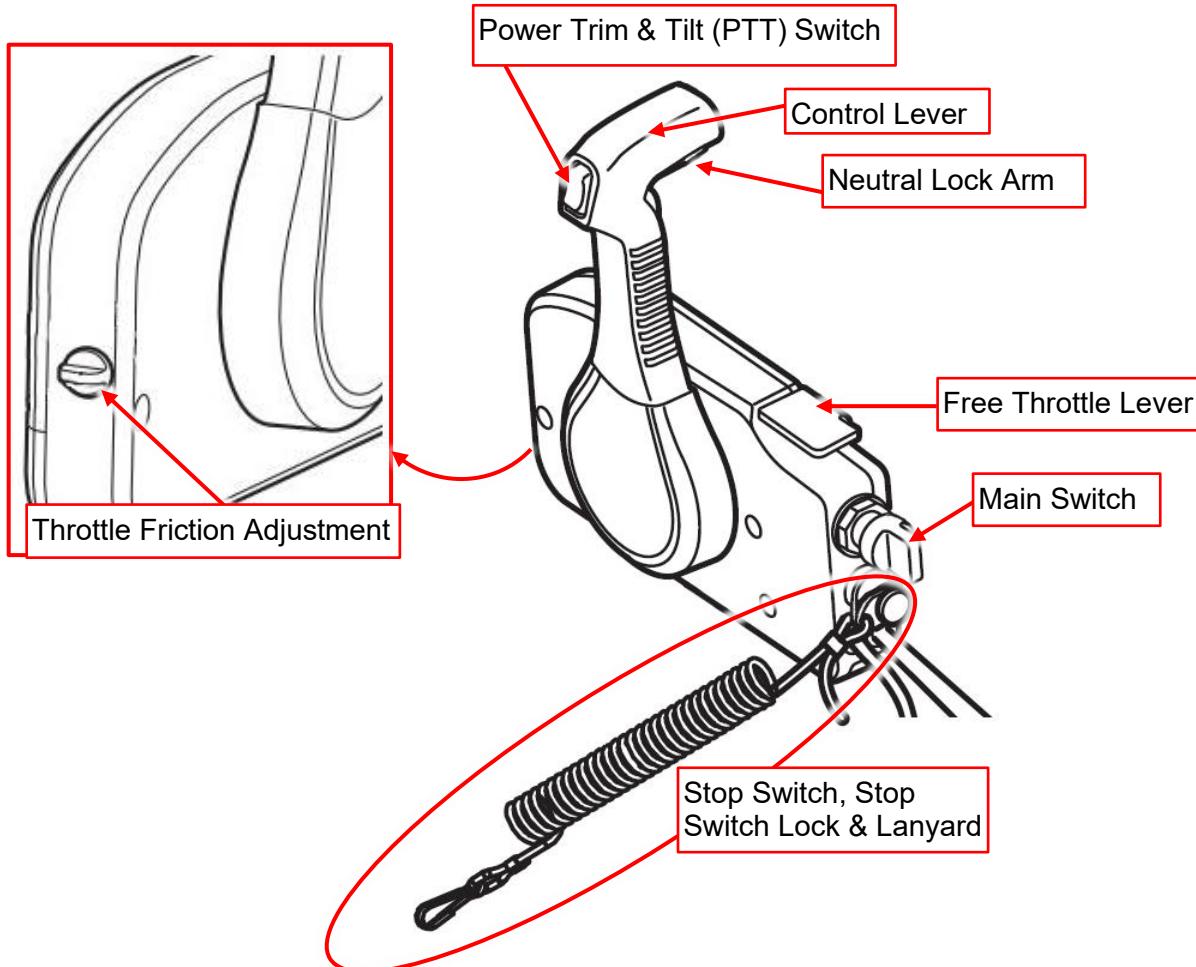
3.6. Engine Part Names 3



Starboard side with Right Heat Exchanger Removed

3.7. Side Mount RC Part Names

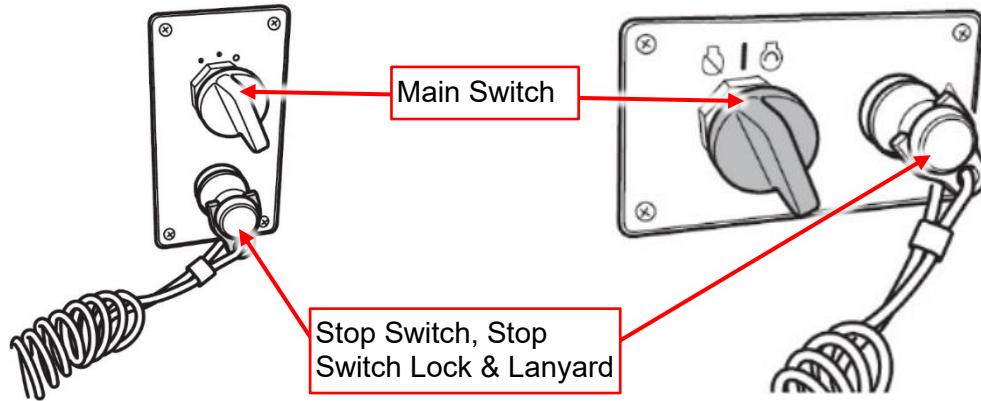
The Side Mount or Top Mount Remote Control boxes are optional parts. See the RC manufacturer's documentation for specific details.



3.8. Top Mount RC Part Names

The Side Mount or Top Mount Remote Control boxes are optional parts. See the RC manufacturer's documentation for specific details.

Top Mount Switch Orientations



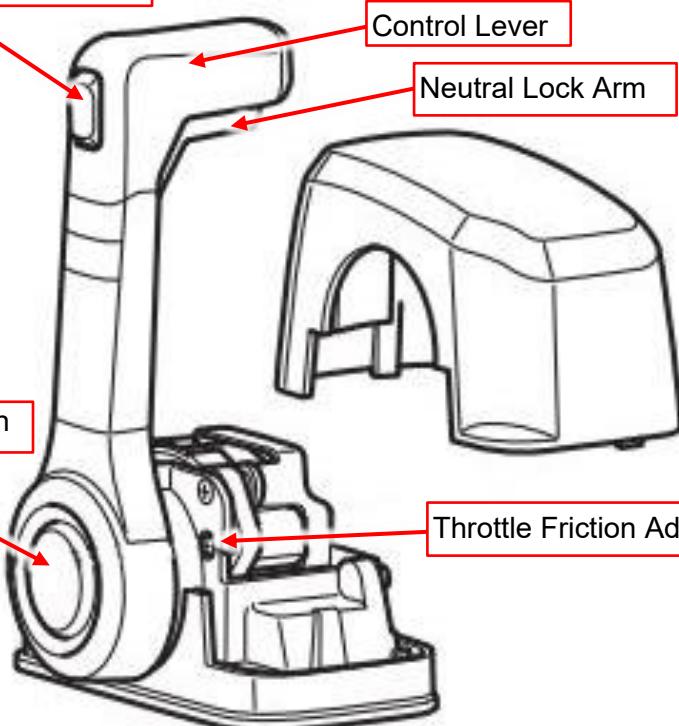
Power Trim & Tilt (PTT) Switch

Control Lever

Neutral Lock Arm

Neutral Throttle Button

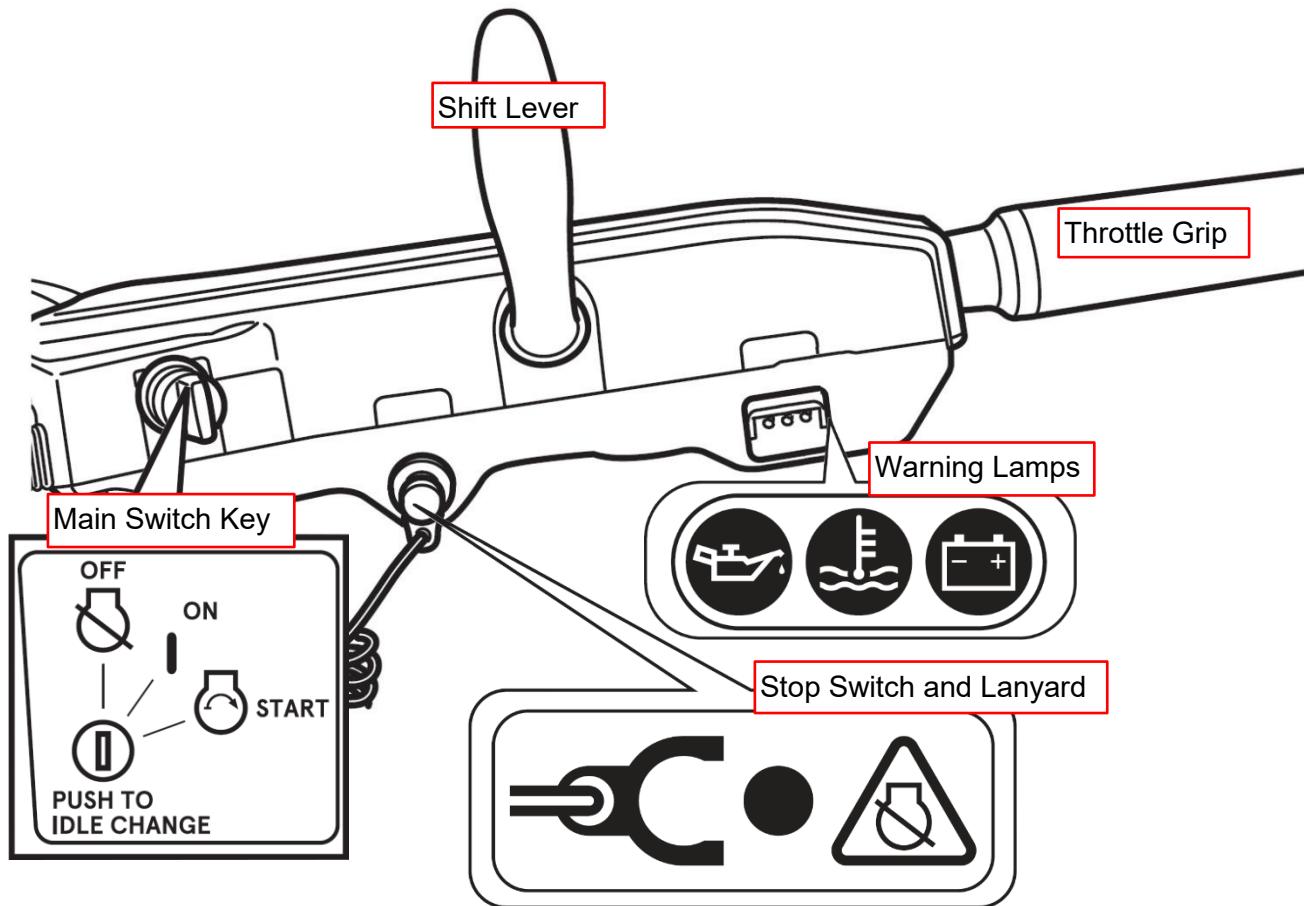
Throttle Friction Adjustment



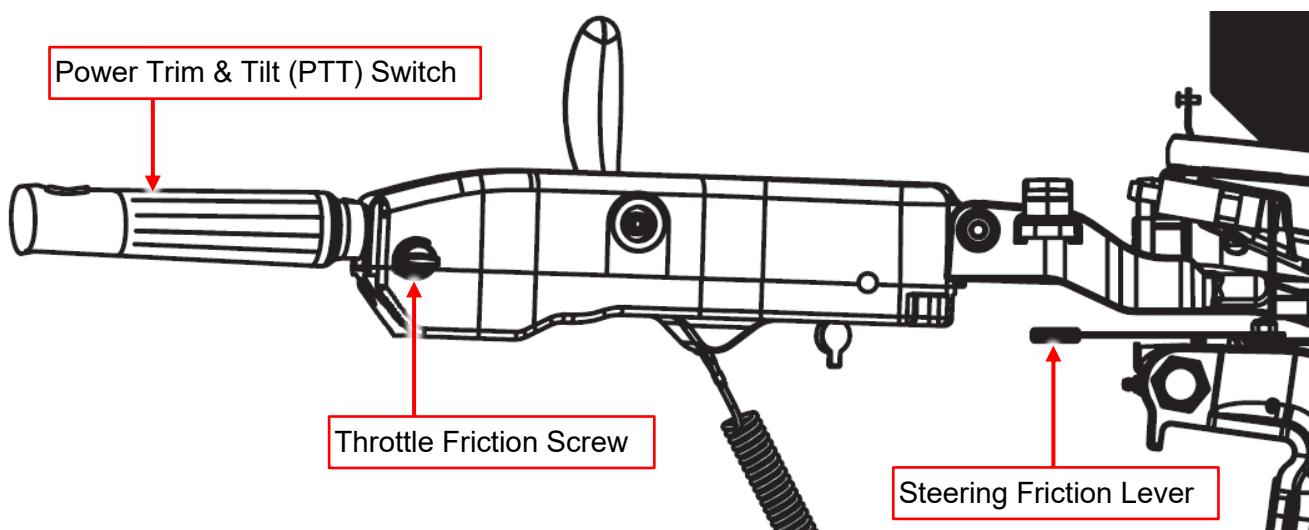
3.9. Multi-Function Tiller Handle Part Names

The Tiller Handle is an optional part. See tiller handle manufacturer's documentation for specific details.

Front View

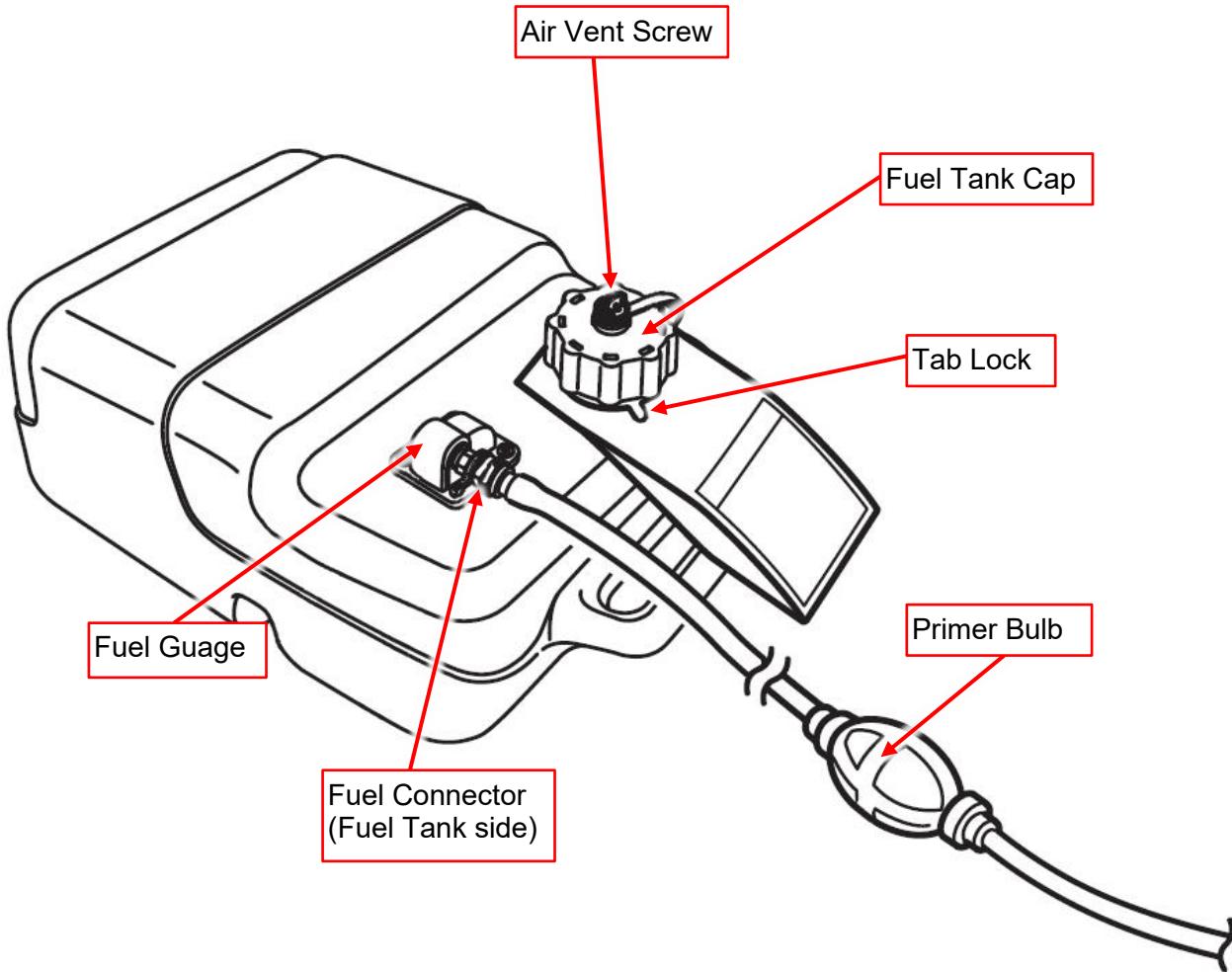


Back View



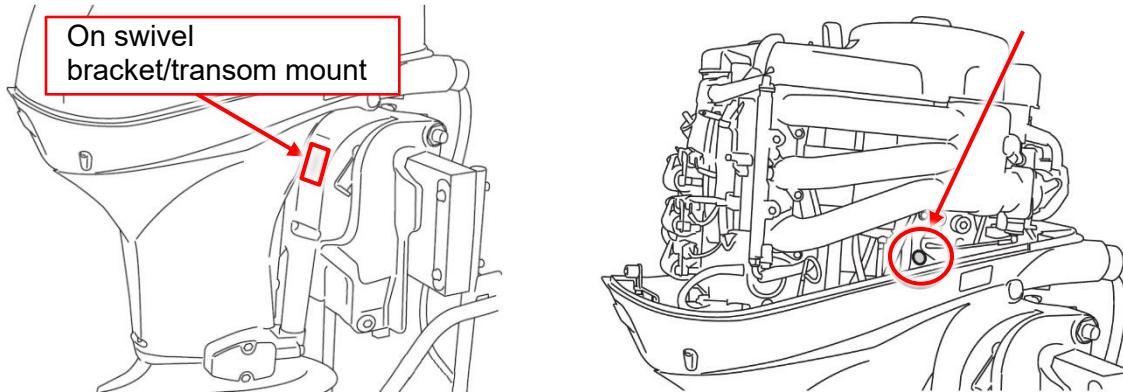
3.10. Fuel Tank Part Names

The External Fuel Tank is an optional part. See fuel tank manufacturer's documentation for specific details.

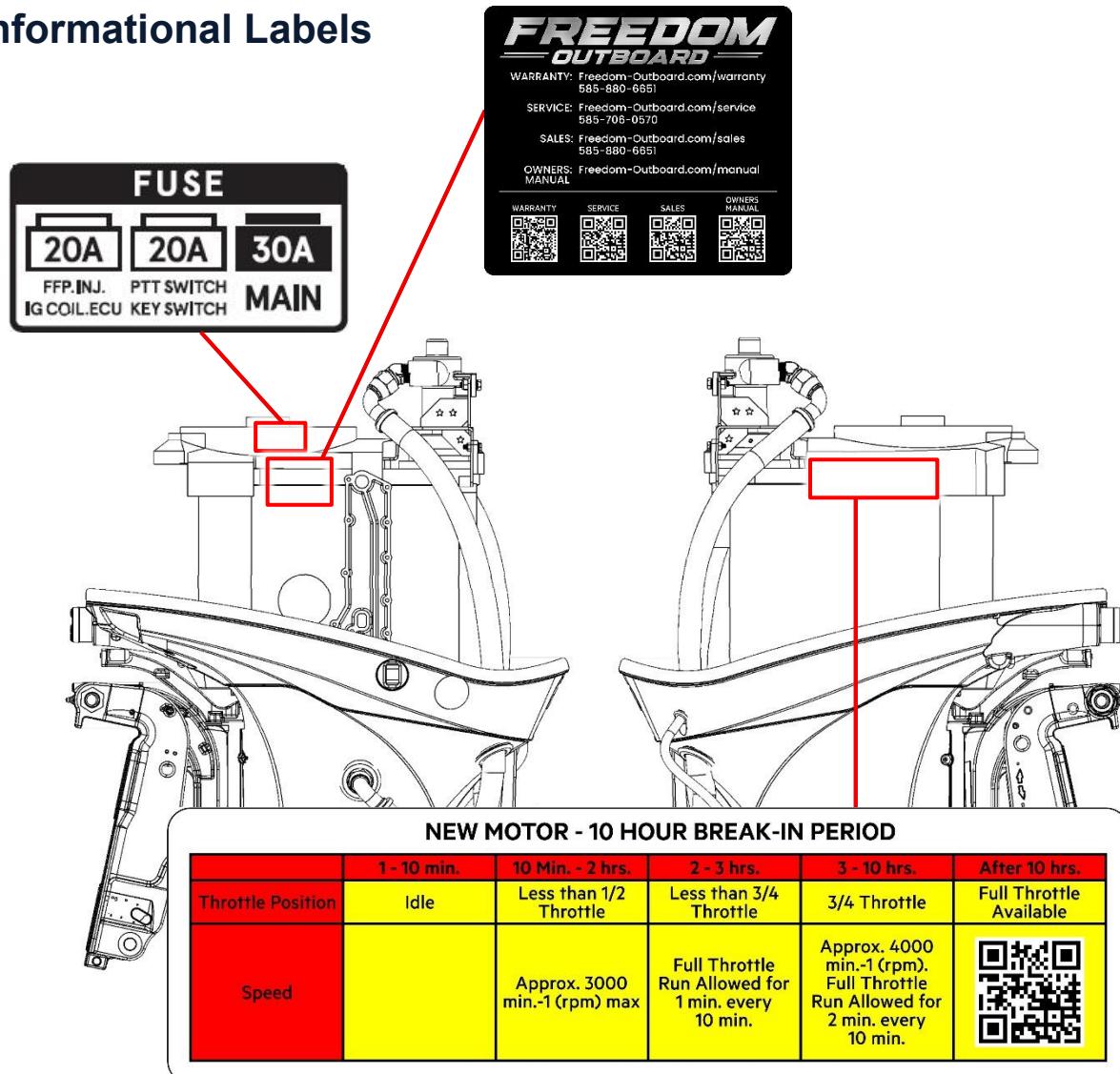


3.11. Engine Label Locations

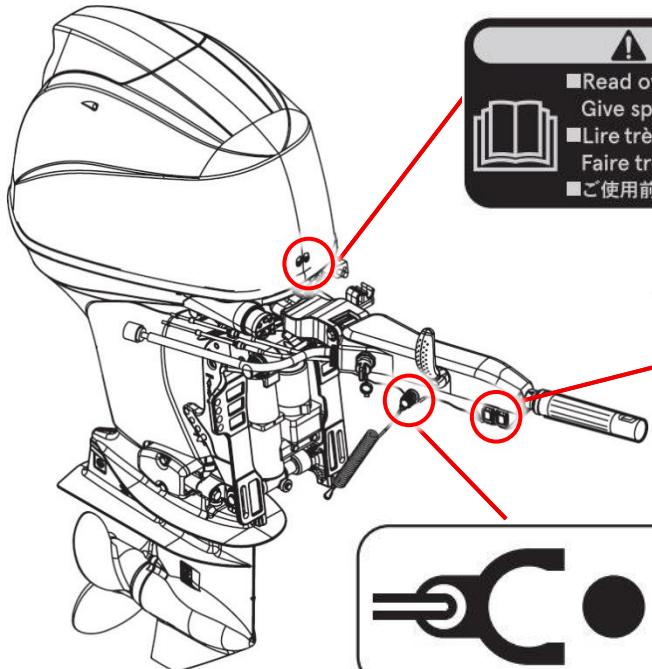
Serial Number



Informational Labels



Warning Labels



WARNING AVERTISSEMENT 警告

- Read owner's manual very carefully before operating this motor.
- Give special attention to safety precautions.
- Lire très soigneusement le livret d'entretien avant de démarrer ce moteur.
- Faire très attention aux mesures de sécurité.
- ご使用前に必ず取扱説明書をお読み下さい。

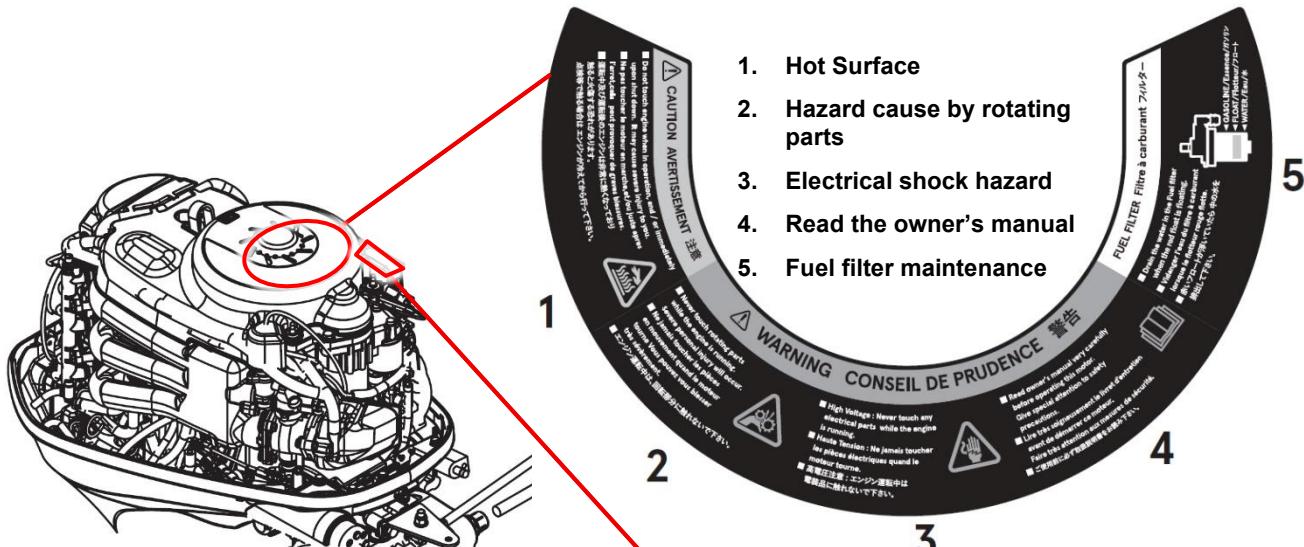
For Tiller Handle model

Warning lamp – See *Warning System Indicators & Faults* pg. 12-4



For tiller handle model

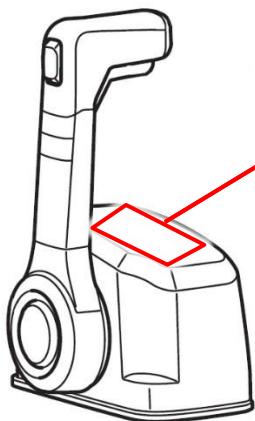
Stop switch lock. See *Safety Lanyard & Emergency Stop Switch* pg. 6-1



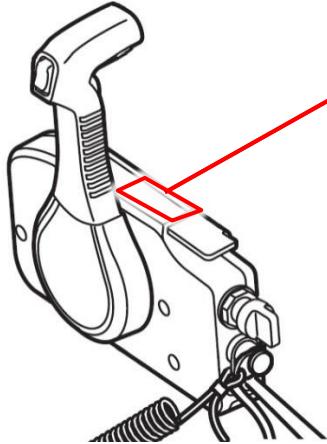
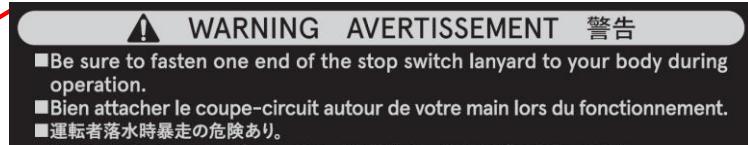
WARNING AVERTISSEMENT

- Ensure shift control is in neutral before starting motor.
- Assurez-vous que la commande de changement de vitesses est au point mort avant de démarrer le moteur.

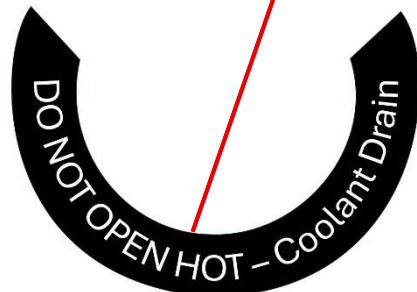
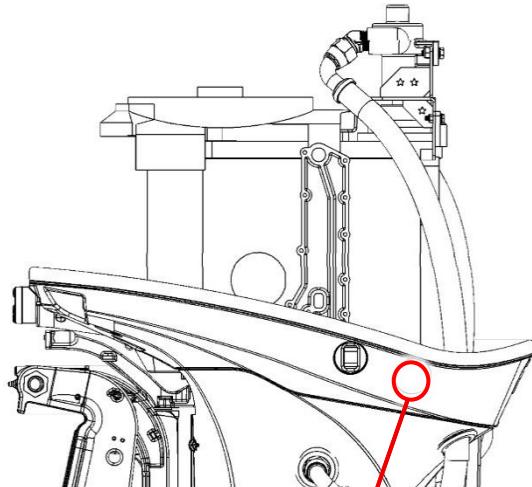
Warning regarding emergency starting
See *Emergency Starting* pg. 6-10.



For RC Side Mount See Safety Lanyard & Emergency Stop Switch pg. 6-1

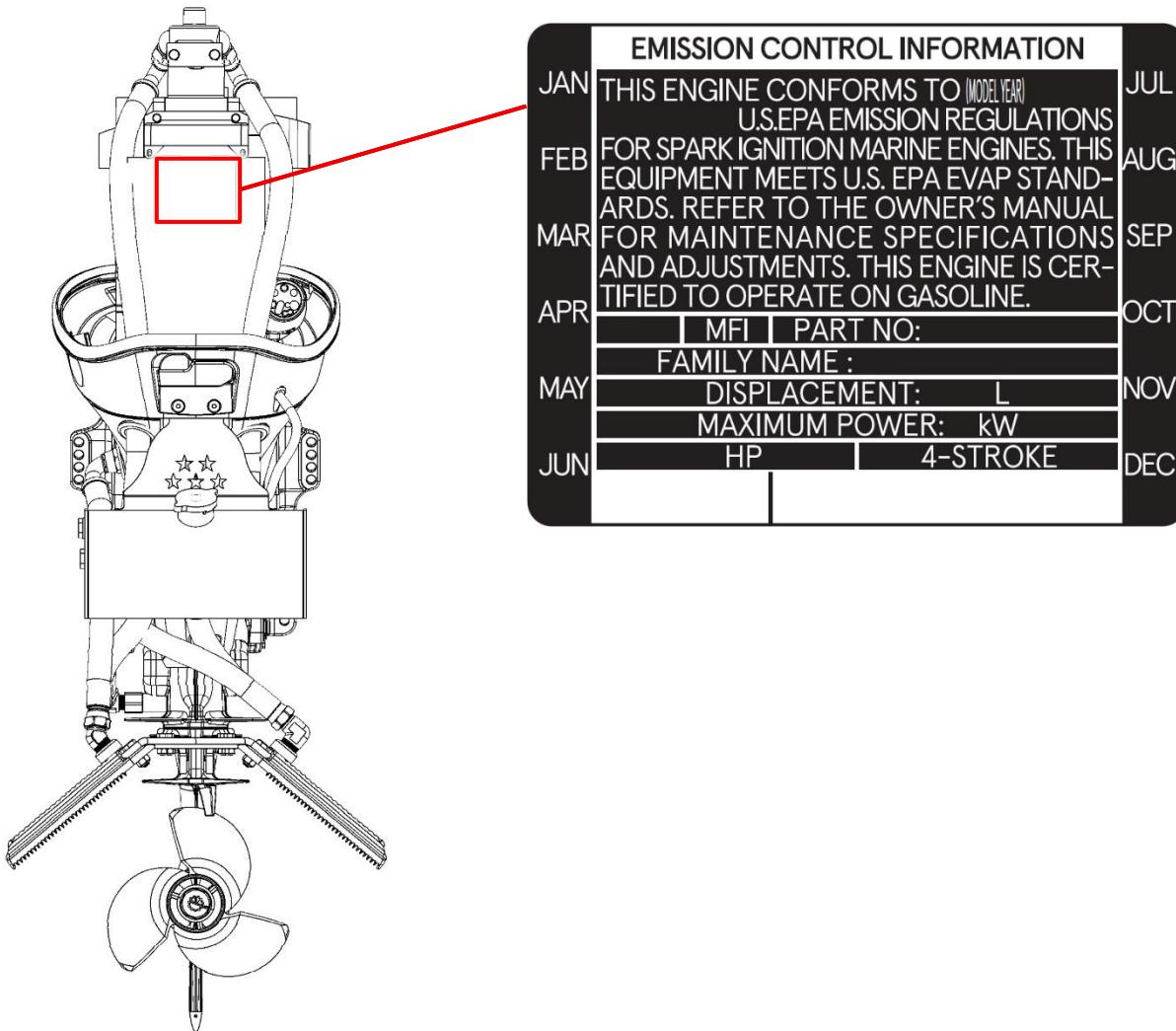


For RC Top Mount Read Owner's Manual



Emission Label

The Emission Control Information label is affixed to engines as permanent evidence of EPA certification.



EPA Emissions Regulations

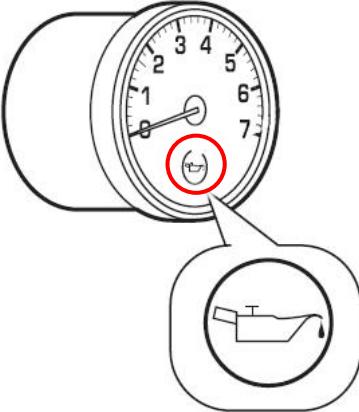
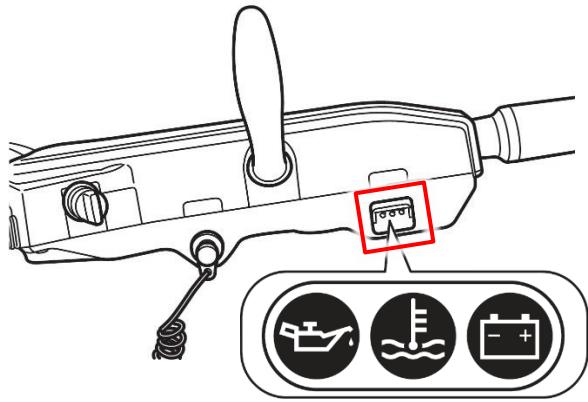
Outboards sold by Freedom Outboard in the United States are certified to the United States Environmental Protection Agency as conforming to the requirements of the regulations for the control of air pollution from new outboard engines. This certification is contingent of certain adjustments being set to factory standards. For this reason, the factory procedure for servicing the product must be strictly followed and wherever practicable, returned to the original intent of the design.

Maintenance, replacement, or repair of the emission control devices and systems may be performed by any marine engine repair establishment or individual.

3.12. Warning Lamp Locations

If the outboard motor encounters an abnormal condition or fault, the warning buzzer emits a continuous or intermittent short beeps. The warning lamp synchronizes with the buzzer and engine speed is limited. Engine does not stop.

See *Warning System Indicators & Faults* pg. 12-4 for warning system notification descriptions.

RC Models	Tiller Handle Model
	

Warning lamp: located in the tachometer

Warning buzzer: located inside the remote control

Warning lamp: located on the tiller handle

Warning buzzer: located on the tiller handle

NOTE: Warning lamp for optional tachometer synchronizes with the warning lamp for engine side.

3.13. Propeller Selection

Propeller selection is important to optimize outboard motor performance. The type and size of propellers have a direct impact on acceleration, cruising performance such as fuel efficiency, and engine life. Consult a Freedom Outboard authorized dealer for selecting an optional propeller.

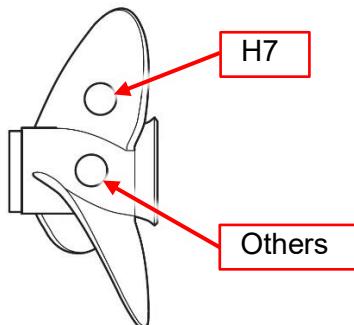
A propeller must be selected to meet the following requirements:

- The engine RPM is measured at wide open throttle while cruising is within the recommended range.
- In general, a large pitch propeller is suitable for smaller operating load, and small pitch propeller is suitable for larger operating load. If the boat load varies significantly, select a propeller that operates within the proper range for the maximum load.

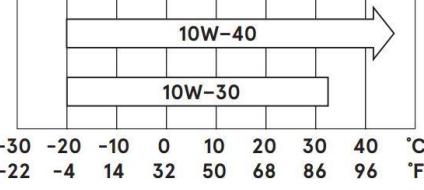
NOTE: It is necessary to have RPM setting within the recommended engine speed range for the lighter board load.

IMPORTANT: A Heavy Duty 16P X 11.25" Propeller may be Included with motor purchase. This Propeller may cause additional gear chatter. Please consult your Freedom Outboard dealer or boat manufacturer about the recommended Propeller to use with your specific configuration and boating needs.

Load	Propeller Mark	Number of Blades	Propeller Size (Diameter x Pitch)	
			inch	mm
Light	11 x 17	3	11 x 17	280 x 432
	11 x 16	3	11 x 16	279 x 406
	11 x 15	3	11 x 15	278 x 381
	11.1 x 14	3	11 x 14	279 x 356
	11.1 x 13	3	10.9 x 13	277 x 330
	11.4 x 12	3	11.1 x 12	283 x 305
	11.6 x 11	3	11.4 x 11	290 x 379
	12.1 x 9	3	12.2 x 9	311 x 229
Heavy	H7	4	11.4 x 7.1	290 x 180



3.14. Service Replacement Specifications

Item	Measurement	Standard Outboard
Fuel NOTE: If your motor is used occasionally, it is recommended to use a fuel stabilizer in every tank of fuel and keep the container full to reduce condensation and evaporation.	Grade	Unleaded regular gasoline USA and Canada: R+M/2: 87 or higher. Outside USA and Canada: RON: 91 or higher. IMPORTANT: DO NOT use leaded gasoline. Use of improper gasoline can damage your engine. Engine damage resulting from the use of improper gasoline is considered misuse of the engine, and damage caused thereby will not be covered under the limited warranty
	Ethanol %	The fuel system components on your Freedom Outboard engine are designed to withstand up to 10% ethyl alcohol (ethanol) content in the gasoline. See <i>Gasolines Containing Ethanol</i> pg. 3-18 for more information on adverse effects of Ethanol.
Engine Oil	Grade	SAE: 10W-30/40 API: SH, SJ or SL IMPORTANT: NEVER use Synthetic Oil. Use of Synthetic Oil will cause catastrophic engine failure
	L (US/Imp. qt)	2.2 (2.3/1.9) without oil filter replacement
		2.4 (2.5/2.1) with oil filter replacement
	Temperature	Select Engine oil viscosity according to the average temperatures in your area. 
Gear Oil	Grade	API GL-5, SAE: 80-90
	mL (US/Imp. oz)	500 (16.9/17.6)
Coolant	Gal	2 gallon 50/50 Ethylene Glycol Antifreeze/water mixture
PTT Fluid		ATF (Automatic Transmission Fluid) Dexron III
Battery*		Minimum battery requirements: 12v 70Ah/20HR, 512 Cold Cranking Amps (CCA). A larger capacity battery is required when used in freezing conditions.
Spark Plug		NGK IKR6G8
Spark Plug Gap	mm (in)	0.7-0.8 (0.028-0.031)
Intake Valve Clearance	mm (in)	40A/50A: 0.15-0.25 (0.006-0.010) 60A: 0.2-0.25 (0.008-0.010)
Exhaust Valve Clearance	mm (in)	40A/50A: 0.25-0.35 (0.010-0.0135) 60A: 0.3-0.35 (0.012-0.0135)

* Purchased separately and not supplied with the outboard motor.

Gasolines Containing Ethanol

The fuel system components on your Freedom Outboard motor withstand up to 10% ethyl alcohol (hereinafter referred to as ethanol) content in the gasoline. If the gasoline in your area contains ethanol, be aware of certain adverse effects that can occur. Increasing the percentage of ethanol in the fuel may worsen these adverse effects. Some of these adverse effects are caused by ethanol absorbing moisture from the air, which leads to separation of the water/ethanol from the gasoline in the fuel tank.

Use of gasoline containing ethanol may accelerate:

- Corrosion of metal parts
- Deterioration of rubber or plastic parts
- Fuel permeation through rubber fuel lines
- Starting and operating difficulties

If the use of gasoline containing ethanol cannot be avoided or presence of ethanol is suspected in the gasoline, it is recommended to use a filter to separate water and frequently check the fuel system for leaks and mechanical parts for corrosion and abnormal wear. In case any such abnormality is found, discontinue the use of such gasoline and contact a Freedom Outboard dealer immediately.

IMPORTANT: When operating a Freedom Outboard engine on gasoline containing ethanol, storage of gasoline in the fuel tank for long periods should be avoided. Long periods of storage create unique problems. In cars, ethanol blended fuels are normally consumed before they can absorb enough moisture to cause trouble, but boats often sit idle long enough for phase separation to take place. In addition, internal corrosion may take place during storage if ethanol has washed protective oil films from internal components.

If the outboard motor will only be used infrequently, see *Off-season Storage* pg. 8-1 for additional information on fuel additives.

3.15. Emission Control System Information

Emission Sources

Carbon monoxide (CO), oxides of nitrogen (Nox) and hydrocarbons (HC) are produced in the course of the combustion process. Controlling production of oxides of nitrogen and hydrocarbons is very important because they react to form a photochemical smog under certain conditions when subjected to sunlight. Carbon monoxide does not react in the same way but is a toxic byproduct.

Ignition Timing Control System

To reduce the amount of HC, CO and Nox produced, the ignition timing control system continuously adjusts the ignition timing.

Fuel Injection System

The Fuel Injection System relies on multiport fuel injection for both engine control and fuel control. The Engine Control Unit (ECU) has several sensors to determine how much fuel is needed for injection under all operating conditions.

Clean Air Acts of the United States and Environment Canada

EPA and Canadian regulations require all manufacturers to provide written instructions that describe the operation and maintenance of commercial emission control systems.

The following instructions and procedures must be followed in order to keep the emissions from your engine within these emission standards.

Tampering and Modifications

Tampering is a violation of the Federal Laws of the United States.

Tampering with or altering the emission control system could cause emissions to increase beyond legal limits. The following acts, although not all inclusive, are considered as tampering:

- Removing or modifying any part of the intake, fuel or exhaust system.
- Modifications that cause the engine to operate outside its design parameters.

Problems that can affect emission

If you noticed any of the following symptoms, have your outboard motor inspected and repaired by an authorized Freedom Outboard service dealer before further use.

- Hard starting or stalling immediately after starting
- Rough idling
- Misfiring/backfiring under load
- Afterburning (backfiring)
- Black exhaust smoke or increased fuel consumption

Replacement Parts

The emission control system in your Freedom Outboard motor has been designed, build, and certified to conform with the EPA emission regulations. Whenever requesting maintenance, use of Freedom Outboard Genuine or Tohatsu parts is highly recommended. Freedom Outboard or Tohatsu Genuine parts constitute replacement parts manufactured to the same high standards as the original parts, thus guaranteeing uninterrupted high performance of your outboard motor. The use of replacement parts other than Freedom Outboard or Tohatsu Genuine parts could jeopardize the effectiveness of the emission control system.

Freedom Outboard or Tohatsu, as a manufacturer of aftermarket parts, assumes the responsibility that replacement parts will not adversely affect emission performance. The manufacturer or rebuilder or the replacement parts must certify that use of the parts will not result in a failure of the engine to comply with these regulations.

Low permeation fuel hose requirement

Equipped for United States and Canada Model

Required for outboards manufactured for sale, sold or offered for sale in the United States.

- Freedom Outboard engine has used fuel hoses for the Environmental Protection Agency (EPA) requirements from January 1, 2011

EPA pressurized portable fuel tank requirements

Equipped for United States and Canada Model

The Environmental Protection Agency (EPA) requires portable fuel systems that are produced after January 1, 2011 for use with outboard engines to remain fully sealed (pressurized) up to 34.4 kPa (5.0 psi). These tanks may contain the following:

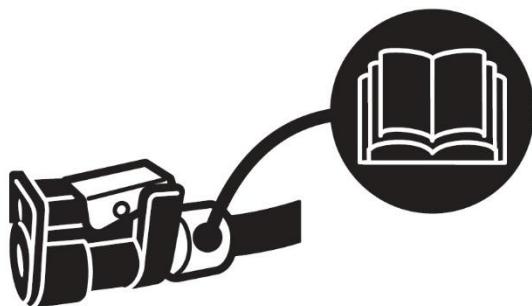
- An air inlet that opens to allow air to enter as the fuel is drawn out of the tank.
- An air outlet that opens (vents) to the atmosphere if pressure exceeds 34.4 kPa (5.0 psi). A hissing noise may be heard as the tank vents to the atmosphere. This is normal.
- When installing the fuel tank cap, turn the cap to the right until you hear two clicks. This signals that the fuel cap is fully seated. A build-in device prevents overtightening.
- The fuel tank has a manual vent screw which should be closed for transportation and full open for operation and cap removal.

Since sealed fuel tanks are not openly vented, they will expand and contract as the fuel expands and contracts during heating and cooling cycles of the outside air. This is normal.

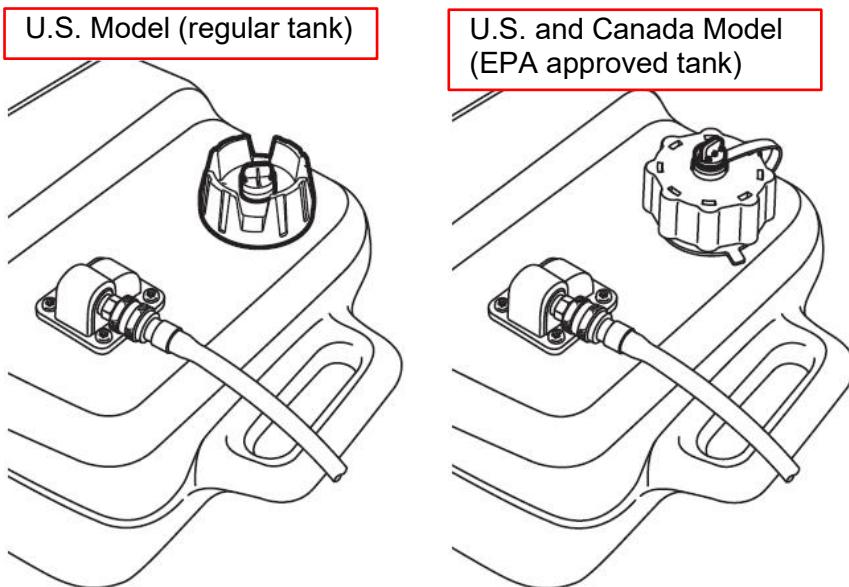
EPA approved Primer bulb/hose assembly

Equipped for United States and Canada Model

Freedom Outboard adopts Primer bulb/hose assembly approved by the Environmental Protection Agency (EPA). Please use the EPA approved primer bulb/hose assembly with the identification mark on the fuel connector.



IMPORTANT: Be sure to use EPA approved tank and EPA approved primer bulb/hose assembly as a set. Confirm shapes of EPA approved tank and regular tank.



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4. Installation

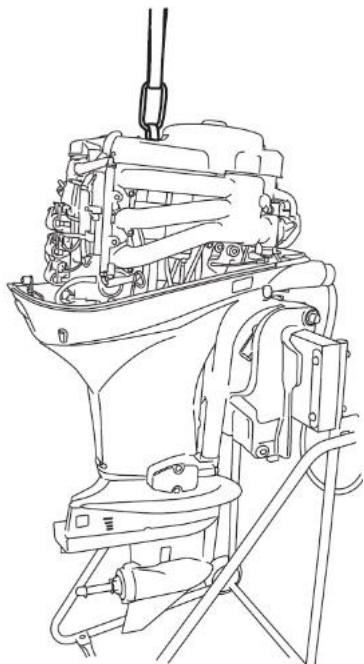
4.1. Mounting the Outboard Motor

Mounting outboard motor must be performed by trained service person(s) in a well-equipped place where lift or hoist is available. A Jack Plate is highly recommended for optimal performance of the Freedom Outboard motor. See *Mounting the Motor with a Breakaway Jack Plate* pg. 4-3 for more information.

WARNINGS:

- Most boats are rated and certified in terms of their maximum allowable horsepower, as shown on the boat's certification plate. DO NOT equip your boat with an outboard motor that exceeds this limit. If in doubt, contact your dealer.
- Mounting the outboard motor without following the instructions in this manual may lead to unsafe conditions, such as poor maneuverability, lack of control or fire. Do not operate the outboard motor until it has been securely mounted on the boat in accordance with the instructions below.

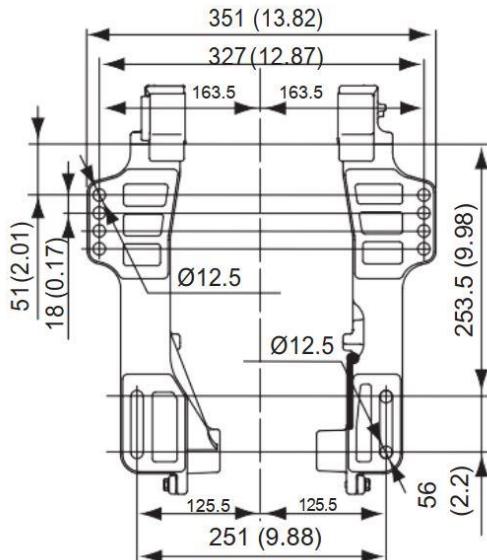
1. Set the outboard motor to the appropriate position using a lift or a hoist.



 **WARNING:** To avoid personal injury or damage of equipment, make sure the allowable lifting capacity of the hoist is at least twice the weight of the outboard motor.

DO NOT allow the lift hook or chain from the hoist to contact any part of the outboard motor during lifting.

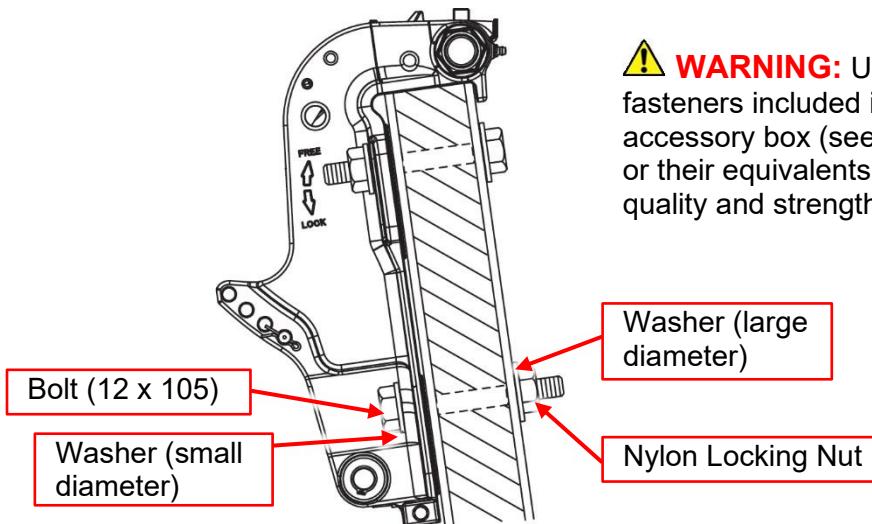
- Verify the clamp bracket and transom board alignment. If adjustments are required, use the following diagram for assistance.



- Secure the clamp brackets to the transom board using bolts, flat washers and nuts.
 - Upper mounting bolts should be installed with the bolt head on the inside surface of the transom.

CAUTION: Mounting bolts installed with the thread end on the inside surface of the transom can cause personal injury.

 - DO NOT** reuse the nylon locking nut.



WARNING: Use outboard mounting fasteners included in the outboard motor accessory box (see *Accessories Box* pg. 3-2) or their equivalents in terms of size, material, quality and strength.

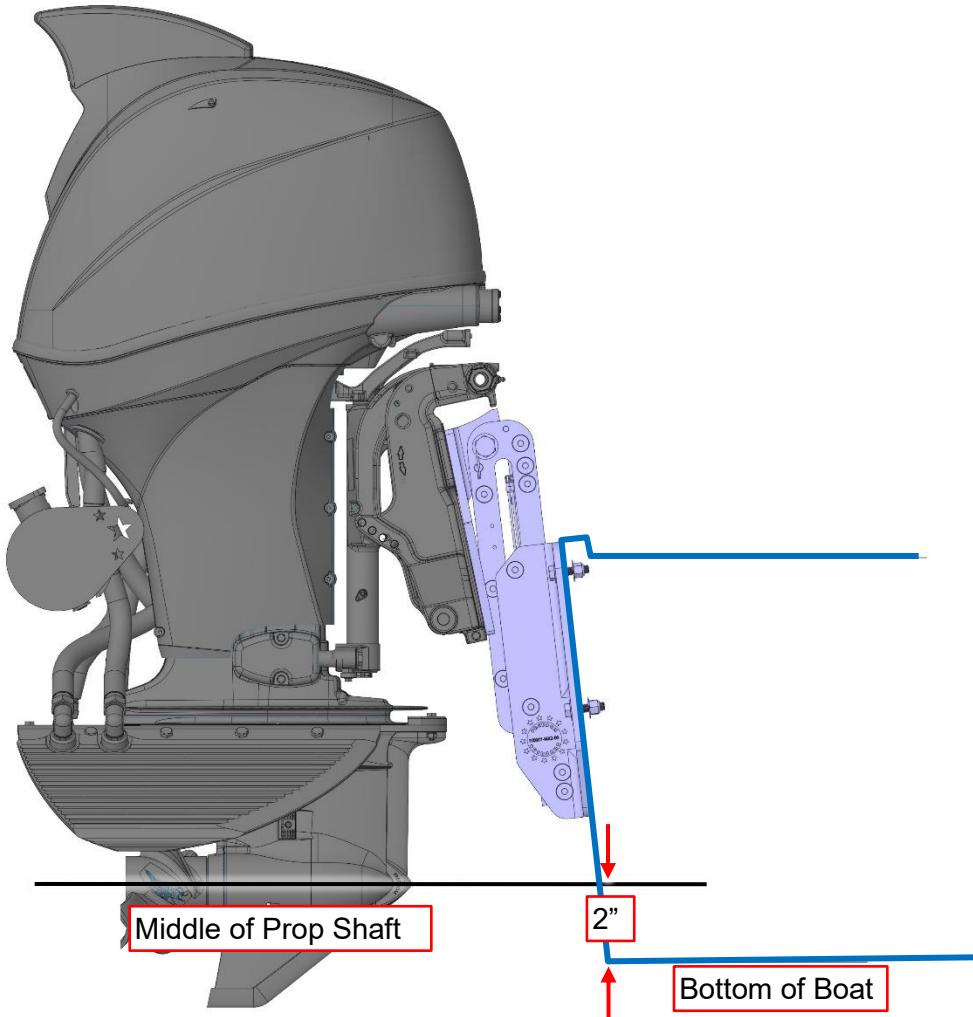
- Apply a sealing agent, such as silicone, between the bolts and the transom board holes before tightening the bolts.
- Tighten hardware.

WARNING: Loose clamp screws and/or mounting bolts can lead to the release or displacement of the outboard motor, possibly resulting in loss of control and/or serious personal injury.

4.2. Mounting the Motor with a Breakaway Jack Plate

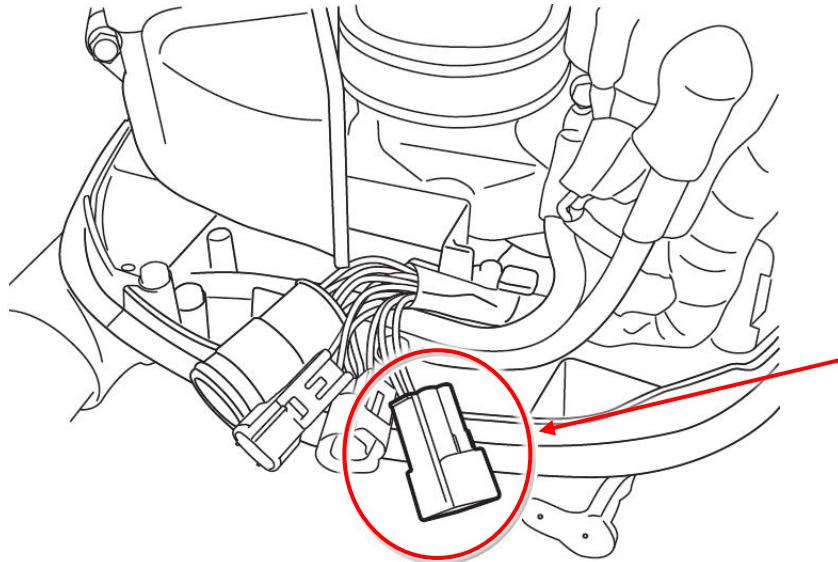
A Freedom Outboard Breakaway Jack Plate is highly recommended for optimal performance of the Freedom Outboard motor.

1. With the jack plate in the fully extended position, the center of the prop shaft must be 2" from the bottom of the boat.



4.3. TOCS Install

TOCS (Tohatsu Onboard Communication System) interface coupler can provide information regarding engine speed, fuel consumption, and various malfunction via an optional interface cable. TOCS is an optional component, purchased separately. Contact a Freedom Outboard Authorized Dealer for more information. Refer to the TOCS documentation for installation instructions.



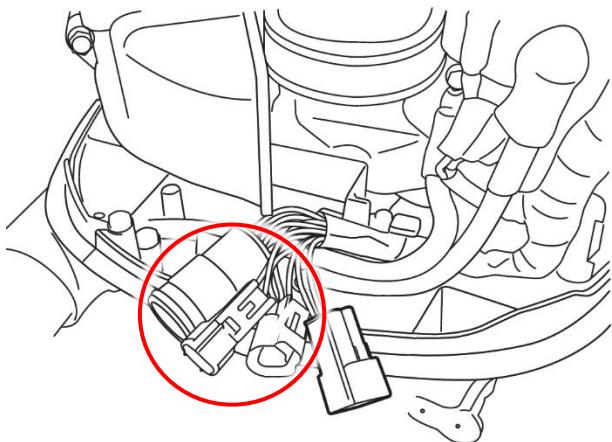
4.4. Tiller Installation

Tillers are an optional part. Follow the manufacturer's instructions for installation instructions.

Tiller Connection

1. Connect the tiller control cables to the engine, making sure it is not sharply bent, too taut and is free from obstructions that could interfere with steering.

IMPORTANT: DO NOT loop the remote-control cables to a diameter of 406 mm (16 inches) or less. Looping too tightly may affect the service life of the cable.



4.5. Remote Control Device Installation

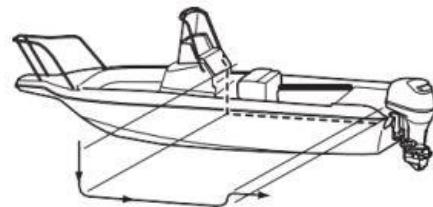
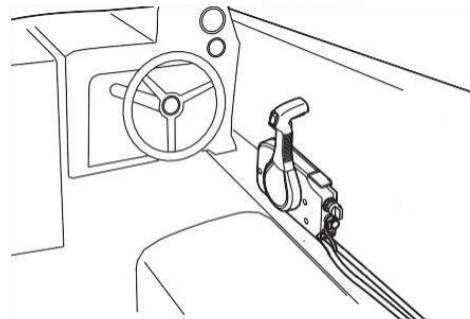
RC Box Location

Install the remote-control box in a position where it is easy to reach and operate the controls. Verify there are no obstacles that can interfere with the operation of the remote-control cable.

Remote Control Devices are an optional part. Follow the manufacturer's instructions for installation instructions.

RC Cable Length

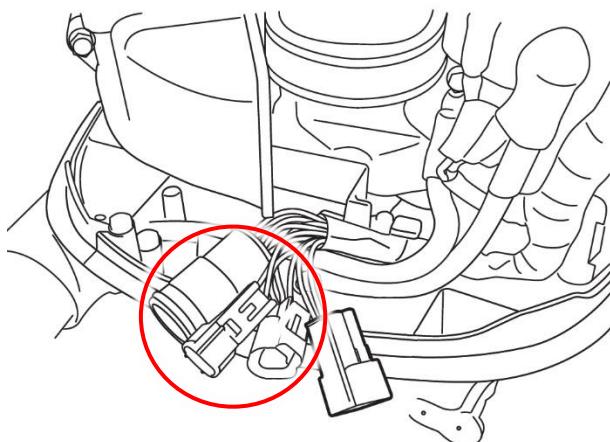
1. Measure the distance from the remote-control box to the outboard motor where the remote-control cable should be routed.
2. Prepare a cable that is 300-450 mm (11.8-17.7 in) longer than the measured distance.
3. Temporarily pull the cable along the intended cable route to check that its length is sufficient.



RC Cable Connection

4. Connect the remote-control cable to the engine, then run the cable to the remote control box, making sure it is not sharply bent, too taut and is free from obstructions that could interfere with steering.

IMPORTANT: DO NOT loop the remote-control cables to a diameter of 406 mm (16 inches) or less. Looping too tightly may affect the service life of the cable.



4.6. Fuel Tank Install

Fuel Tanks are purchased separately. Refer to the fuel tank manufacturer's recommendations, procedures and safety information. Specifications and features of fuel tanks vary among the manufacturers. See *Fuel Tank Part Names* pg. 3-10 for general fuel tank parts referred to in this manual.

⚠ DANGER ⚠

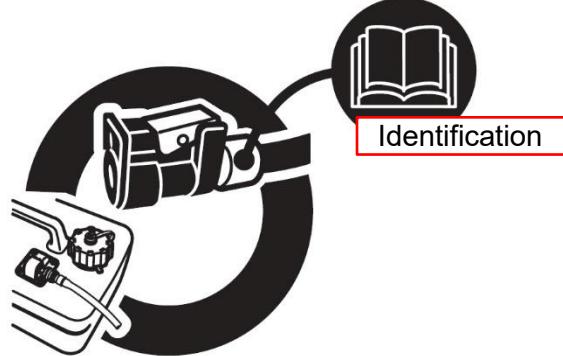
**Review Gasoline and Engine Exhaust Safety
pg. 2-2 for gasoline hazards.**

⚠ WARNINGS:

- Fuel tank must be fixed at appropriate position so that it is well ventilated and tank does not move or fall down while operating.
- When using EPA approved fuel tank, only use a primer bulb/hose assembly that has a Fuel Demand Valve (FDV) installed in the fuel hose or a sealing mechanism in the fuel connector as shown below. FDV's and fuel connectors that have a sealing mechanism prevent pressurized fuel spillage when the fuel connector is connected to the engine.
- Do NOT use a primer bulb/hose assembly that does not contain a Fuel Demand Valve or a sealing mechanism as shown below otherwise fuel spillage may occur when the connector is connected to the engine.



FDV in fuel hose

Sealing mechanism
in fuel connector

4.7. Propeller Install

Select a propeller that allows the engine to reach recommended maximum operating range during cruising. See *Propeller Selection* pg. 3-16 for specifications.

Propellers are purchased separately. Refer to the propeller manufacturer's recommendations, procedures and safety information.

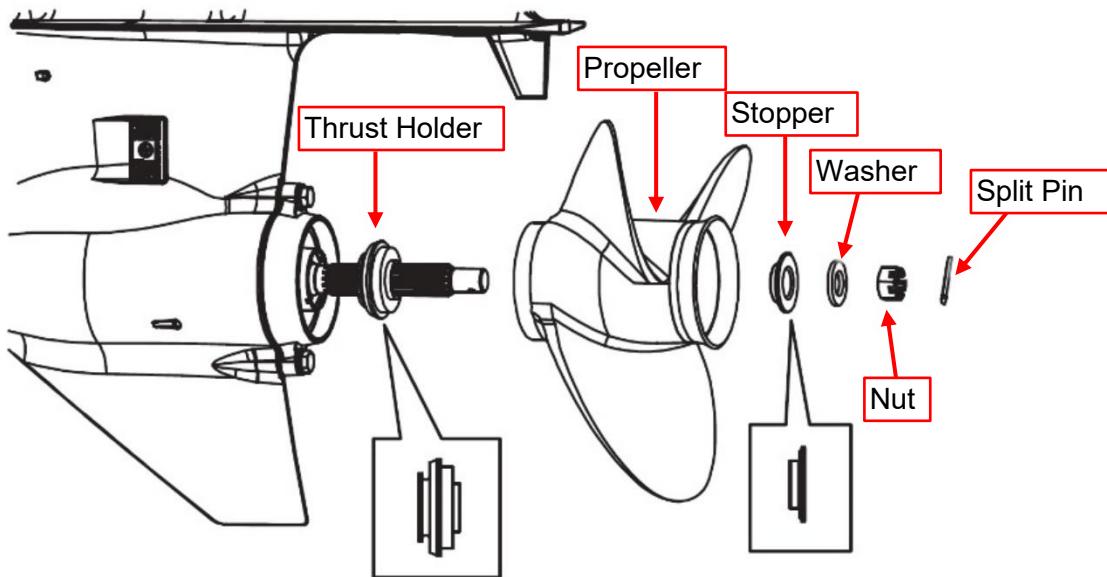
⚠ DANGER ⚠

DO NOT begin propeller removal and installation procedure without taking the preparation steps, or engine could accidentally start leading to serious personal injury

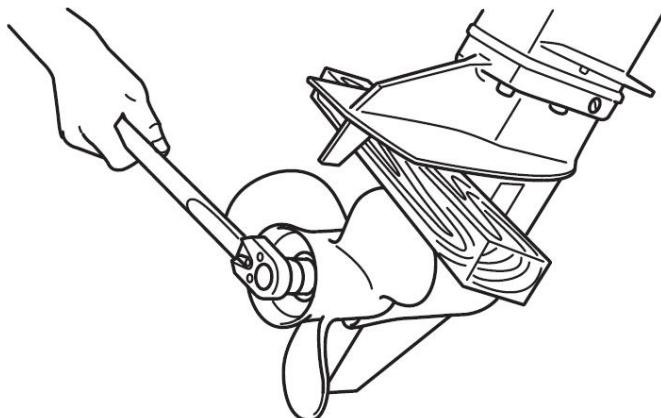
1. Prepare the motor.
 - The Shift is in neutral.
 - Main switch is OFF and Starter key is NOT in the switch.
 - The Engine Stop switch lock is NOT attached to the switch. See *Safety Lanyard & Emergency Stop Switch* pg. 6-1 for general information on the Stop switch.
 - Remove spark plug caps.
 - Disconnect battery, if possible. See *Battery Disconnect* pg. 6-3.
2. Remove any currently installed propeller.
 - a) Remove the split pin, nut, washer and stopper.
 - b) Remove the propeller.
3. Remove the thrust holder.
4. Apply water proof grease to the propeller shaft.
5. Install the thrust holder back onto the shaft.
6. Install the propeller onto the shaft.

IMPORTANT: Do not install propeller without thrust holder, or propeller boss may be damaged.

7. Install the stopper, washer and nut.



8. Put a piece of wood between the propeller blade and anti-ventilation plate to hold propeller.



9. Tighten the propeller nut while holding the propeller with a wood block and align one of the grooves to the propeller shaft hole.

Propeller Nut Specified Torque: 35 Nm (25 ft-lb, 3.5kgf-m).

10. Install a new split pin into the nut hole and spread the pin apart to prevent it from falling out.

11. Propeller is installed.

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5. Pre Operating Preparations

The Pre-operating preparations may be done with the engine on a lift or while the engine is mounted to the boat. These procedures are intended to be performed by the dealer or the owner before the first time the engine is in use. Run the pre-operating procedures after the following components are installed:

- Battery – see *Battery Install & Connect* pg. 6-2.
- Tiller handle or RC device – see *Tiller Installation* pg. 4-5 or *Remote Control Device Installation* pg. 4-6.
- Fuel tank – see *Connect External Fuel Tank* pg. 6-4.

Pre-operating procedures must be run in order.

1. Fill Fuel – see *Fill Fuel* pg. 5-2.
2. Fill Engine oil – see *Fill Engine Oil* pg. 5-4.
3. Fill Coolant – see *Fill Coolant* pg. 5-6.
4. Start the engine and idle for 5 minutes. Check that there are no leaks and no warning indicator lights activate. See *Warning* pg. 3-15.
5. Break in – see *Break-in Schedule* pg. 5-8.

5.1. Fill Fuel

Use the procedure below to fill an external fuel tank. Fuel tanks are purchased separately.

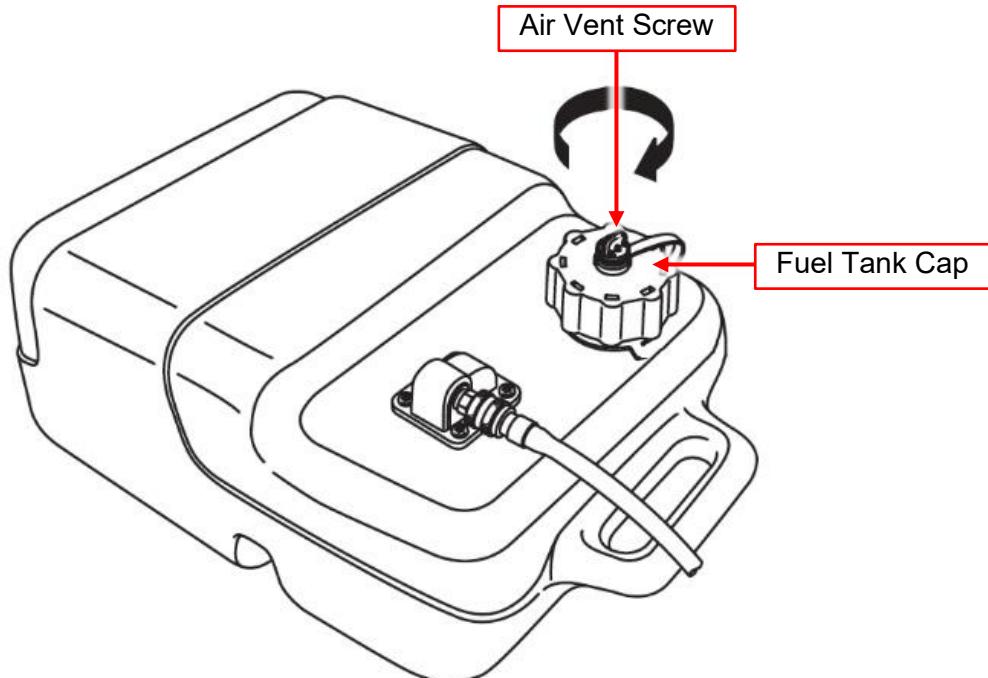
IMPORTANT: If your motor is used occasionally, it is recommended to use a good fuel stabilizer in every tank of fuel and keep the container full to reduce condensation and evaporation.

DANGER

Review Gasoline and Engine Exhaust Safety
pg. 2-2 for gasoline hazards.

1. Disconnect the external fuel tank from the Engine. See *Disconnect External Fuel Tank* pg. 6-6.
2. Fully open the air vent screw on the fuel tank cap and release internal pressure.
3. Open the fuel tank cap slowly.
4. Loosen the tank cap until it contacts the tab lock and releases internal pressure completely. After that, press down the tab lock and open the tank cap.

⚠ WARNING: Internal pressure present in the fuel tank may raise by heat from sources such as sunlight. Follow the procedure as described to slowly release pressure. Failure to do so may cause fuel to blast out through the fuel tank cap



5. Select the fuel.

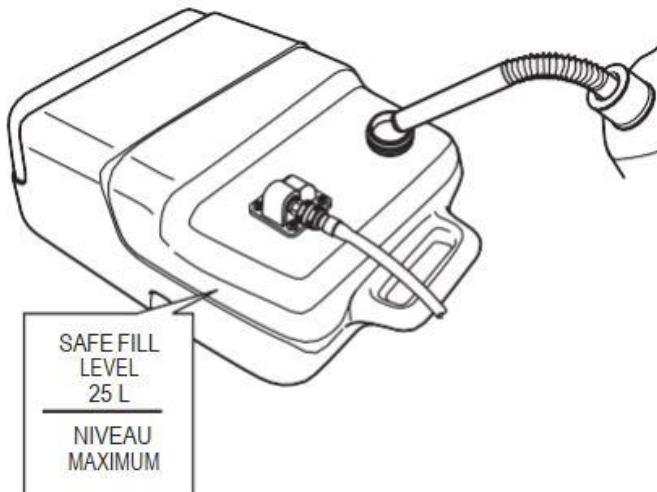
- See *Service Replacement Specifications* pg. 3-17 for more information on Fuel ratings and *Gasolines Containing Ethanol* pg. 3-18 warnings regarding Ethanol damage.
- If your motor is used occasionally, it is recommended to use a good fuel stabilizer (commercially available) in every tank of fuel and keep the container full to reduce condensation and evaporation. Follow the fuel stabilizer instructions for additive quantities.

IMPORTANT: Use of improper gasoline can damage your engine.

⚠ WARNING: Gasoline and its vapors are very flammable and can be explosive. See *Gasoline and Engine Exhaust Safety* pg. 2-2.

6. Fill the fuel carefully and do not overflow.

⚠ WARNING: Do not fill the fuel tank over capacity. The rise of gasoline temperature may cause gasoline to expand which, may leak through air vent screw when it is open. Leaking gasoline is a dangerous fire hazard.



7. After filling the tank, close the fuel tank cap until two clicks are heard.

8. Wipe any spilled fuel immediately.

⚠ WARNING: When carrying a fuel tank containing gasoline, close the fuel tank cap and air vent screw of the fuel tank cap, or gasoline vapor will be emitted through the air vent screw and may lead to a fire hazard.

9. Fuel Tank is filled. Connect and pressurize before daily use or as needed.

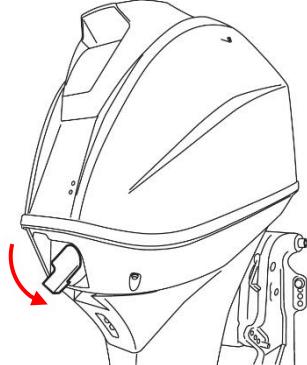
See *Connect External Fuel Tank* pg. 6-4.

See *Pressurize External Fuel Tank* pg. 6-5.

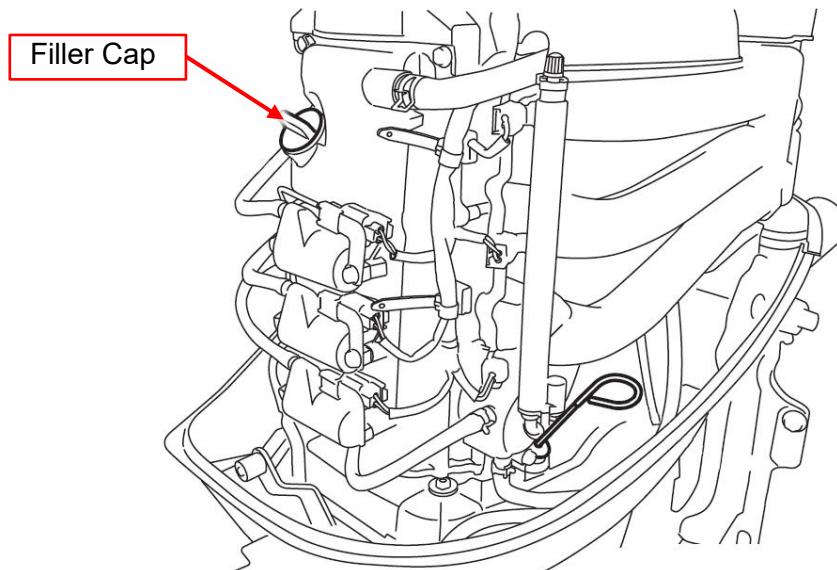
5.2. Fill Engine Oil

The engine oil is drained for shipping. Fill the engine to the proper level before starting the engine.

1. Place the engine in an upright and level position.
2. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.



3. Remove the oil filler cap.



4. Select the Engine Oil and quantity. See *Service Replacement Specifications* pg. 3-17 for Engine Oil specifications.

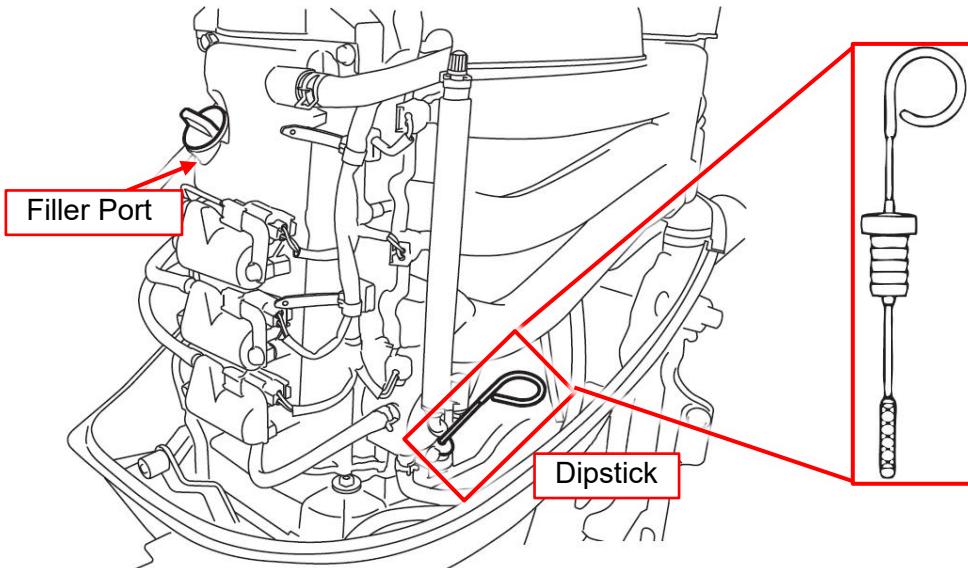
IMPORTANT:

- Use of engine oils that do not meet these requirements will result in reduced engine life, and other engine problems.
- Never use Synthetic Oil. Use of Synthetic Oil will cause catastrophic engine failure!

- Fill the engine oil through the filler port. Capacity is specified in *Service Replacement Specifications* pg. 3-17.

CAUTION: Wipe off oil immediately if spilled.

- Replace and tighten the oil filler cap.
- Wait 5 minutes to allow oil to settle then remove the dipstick.



- Wipe oil off the dipstick with a clean cloth.
- Insert the dipstick into the hole completely, then remove the dipstick again.
- Check the oil level on the dipstick. The oil level must be between the upper limit and lower limit shown on the dipstick.

IMPORTANT: If the oil level is low, or too high, the life expectancy of the engine will be shortened significantly.

- If more oil is required, add more engine oil and then repeat the oil level checks.

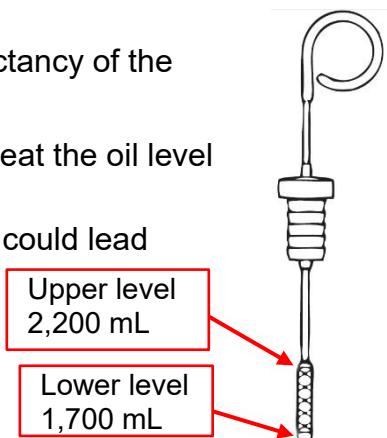
IMPORTANT: DO NOT overfill engine oil, or engine oil could lead and/or engine could be damaged.

- If oil needs to be removed, refer to the oil draining steps of the *Engine Oil & Oil Filter* - pg. 10-6 procedure, then repeat the oil level checks.

- Replace the dipstick.

- Engine oil is filled. Before starting engine for the first time, disconnect the stop switch lock and crank the main switch key approximately 10 times to prime the oil pump.

IMPORTANT: Stop engine immediately if low oil pressure warning lamp is activated lit or oil leak is found, or engine could be severely damaged. See *Warning System Indicators & Faults* pg. 12-4 for more information on Warning lights.



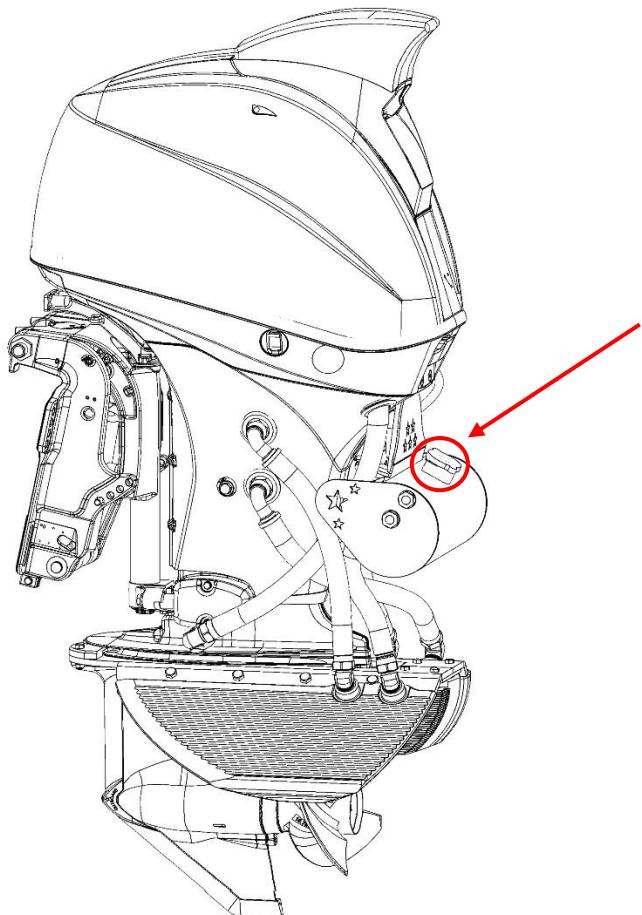
5.3. Fill Coolant

The Coolant is drained for shipping at the factory. Be sure to fill the engine to the proper level before starting the engine.

The Coolant Tank provides two sight glasses for assisting with checking Coolant Levels.

- The lower sight glass is used to assess correct Coolant levels while the engine is running as directed below and Coolant is moving through the system.
- The upper sight glass may show a level of Coolant while the engine is at rest and Coolant has drained back into the tank. Coolant levels are not expected to be visible in the upper sight glass while the engine is running. Visible Coolant levels in the upper sight glass while the engine is running is an indication that the tank is overfilled.

1. Place the engine in an upright and level position.
2. Remove the coolant filler cap.



3. Select the Coolant. See *Service Replacement Specifications* pg. 3-17 for Coolant specifications.

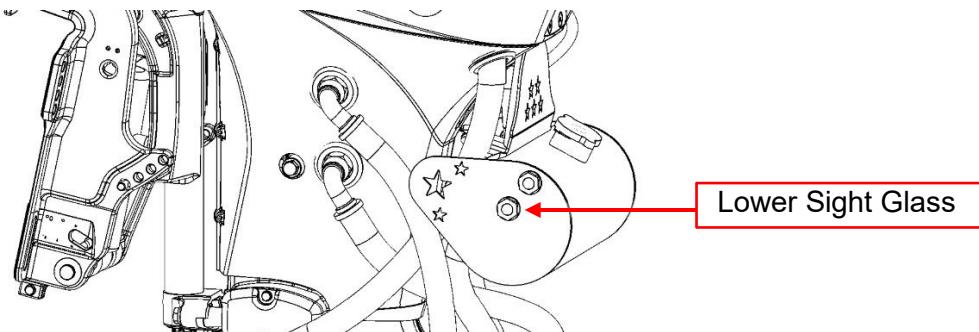
4. Fill Coolant.

- a) Add Coolant until tank is filled to middle of the lower sight glass.

CAUTION: Wipe off coolant immediately if spilled.

- b) Start and run the motor at idle. While the motor is running, add Coolant until the tank fill stabilizes to the middle of the lower sight glass.
- c) Increase motor speed to $2500 \text{ min}^{-1}(\text{rpm})$ for roughly 10 seconds. While the motor is running, add Coolant until the tank fill stabilizes to the middle of the lower sight glass.

IMPORTANT: Overfilling the Coolant Tank may cause coolant to leak from the coolant filler cap during operation. If the tank is overfilled, use a syphon to remove excess coolant.



5. Stop the engine.

6. Replace and tighten the coolant filler cap.

7. Coolant is filled.

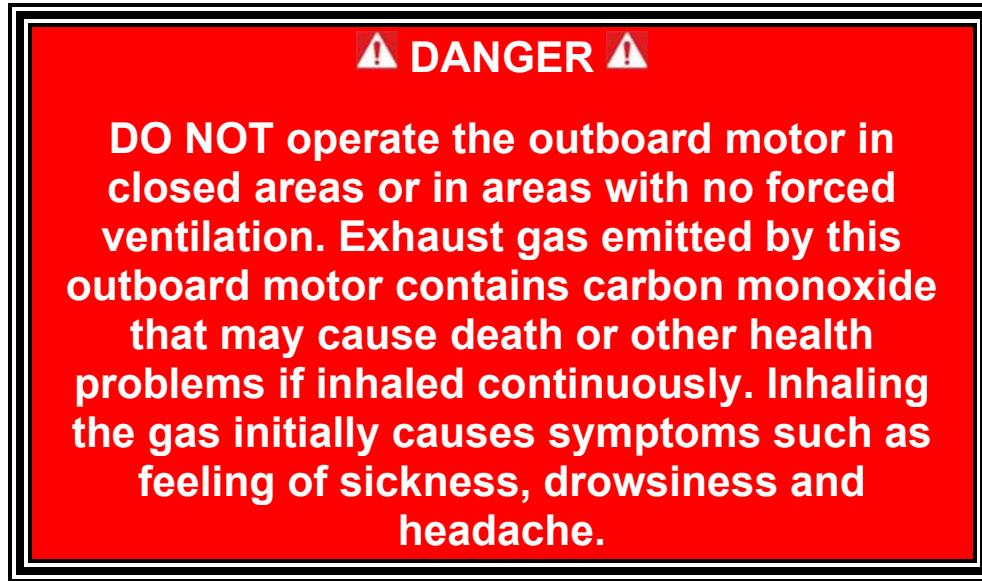
5.4. Break-in Schedule

Your new outboard motor requires break-in for the moving components according to the conditions described in the following timetable. Proper break-in allows the outboard motor to deliver its full performance for a longer service life. Break-ins must be conducted under load in the water with propeller installed and in gear.

See *Informational Labels* pg. 3-11 for the location of this break-in label on the engine.

NEW-MOTOR--10-HOUR-BREAK-IN-PERIOD					
	1-10-mins	10-min--2-hrs	2-hrs--3-hrs	3-hrs--10-hrs	After-10-hrs
Throttle-Position	Idle	Less-than-½-throttle	Less-than-¾-throttle	¾-throttle	Full-throttle-available
Speed		Approx. 3000-min ⁻¹ (rpm)-max	Full-throttle-run-allowed-for-1-min-every-10-min	Approx.4000-min ⁻¹ (rpm)-Full-throttle-run-allowed-for-2-min-every-10-min	

IMPORTANT: Not following the Break-in schedule may result in problems and may shorten the product life.



Please refer to Engine Operation section of this manual to learn how to correctly start and operate the outboard motor. See *Engine Operation* pg. 6-1.

If any abnormality is experienced during the break-in:

- Discontinue the operation immediately.
- Have a Freedom Outboard Authorized Dealer check the product.

6. Engine Operation

Before boating, review *Safe Boat Operation* pg. 2-5 for safe boating operation information.

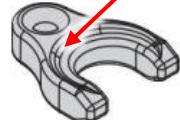
If the outboard motor encounters an abnormal fault condition during operation, the warning buzzer will emit beep(s) and the warning lamp will synchronize illumination with the buzzer. See *Warning System Indicators & Faults* pg. 12-4 for more information.

6.1. Safety Lanyard & Emergency Stop Switch

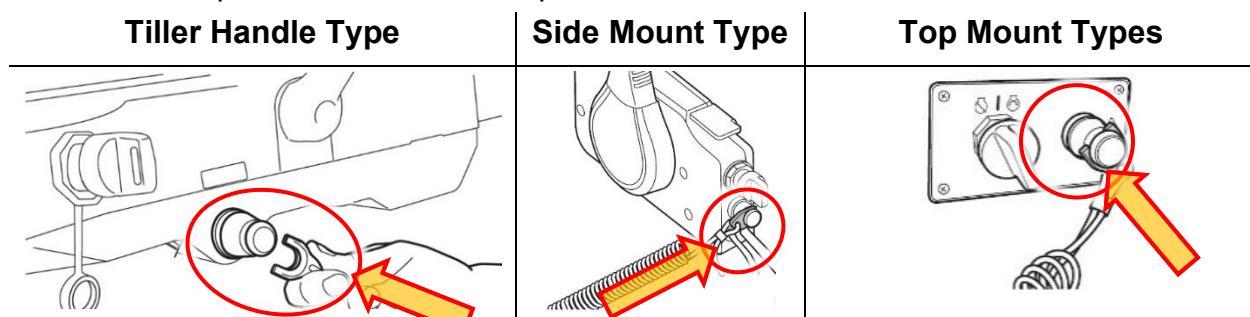
The safety lanyard is the coiled red cord with the stop switch lock on one end and a metal clip on the other end. When properly connected as described below, the engine will stop when the stop switch lanyard is stretched and pulled out from the lock.

It is the operator's responsibility to use the safety lanyard.

Stop Switch Lock



1. A spare emergency stop switch lock is provided in the accessories box (see *Accessories Box* pg. 3-2). Verify the spare stop switch lock is available before operating the outboard motor.
2. Install the stop switch lock to the stop switch.



3. Attach the stop switch lanyard securely to the operator or to the operator's PFD (Personal Flotation Device).

 **WARNINGS:**

- Do not attach the lanyard to a part of clothing that can be torn easily when pulled.
- Arrange the lanyard so that it will not be caught by any objects when pulled.

4. Keep the safety lanyard attached during boat operation.

WARNING: Accidental activation of the Stop Switch may cause passengers to lose their balance and fall overboard, or it could result in loss of power. Loss of control while mooring is another potential hazard. To minimize accidental activation of the Stop Switch, the 500 mm (20 in) stop switch lanyard is coiled and can extend to a full 1300 mm (51 in).

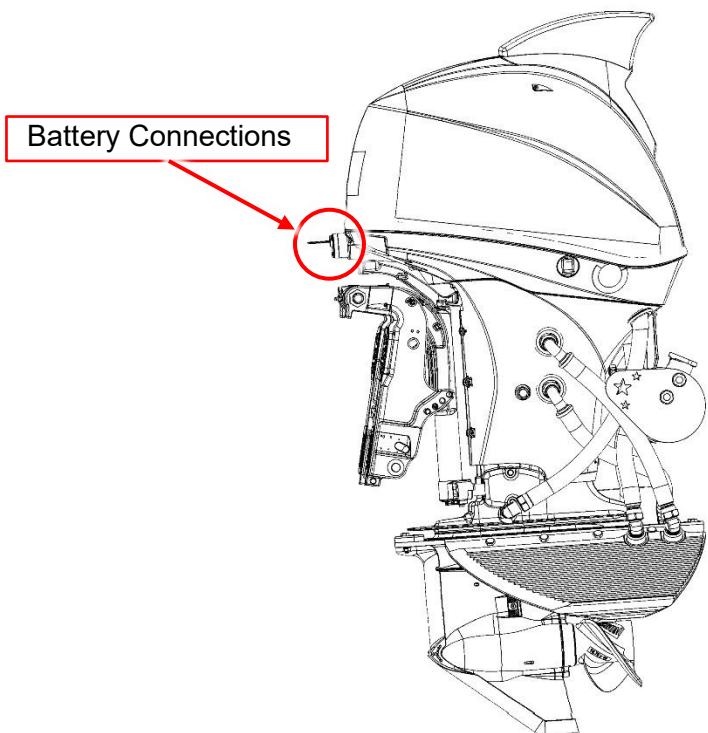
6.2. Battery

Batteries are purchased separately.

⚠️ WARNING: Before handling any battery, review *Battery Hazards* pg. 2-4 for safety precautions and refer to the battery manufacturer's recommendations, procedures and safety information.

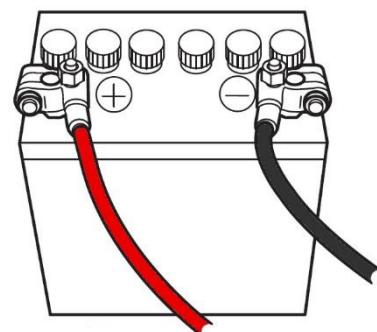
Specifications and features of batteries vary among the manufacturers. See *Service Replacement Specifications* pg.3-17 for battery requirements.

Battery Install & Connect



IMPORTANT: Always use a fully charged battery.

1. Place the battery box in a convenient position away from possible water spray. Securely fasten both the box and the battery so they do not shake loose.
2. Connect the positive lead (+) to the positive terminal (+) of the battery.
3. After connecting the positive terminal (+), securely place a cap on it to prevent short circuits.



4. Connect the negative lead (-).

IMPORTANT: The starter motor may fail to operate or may be damaged if the leads are incorrectly connected.

- It is recommended that only the engine battery cables are used to connect the battery.
- Verify that the battery leads do not get stuck between the outboard motor and boat when turning, etc.

5. Battery is installed and connected.

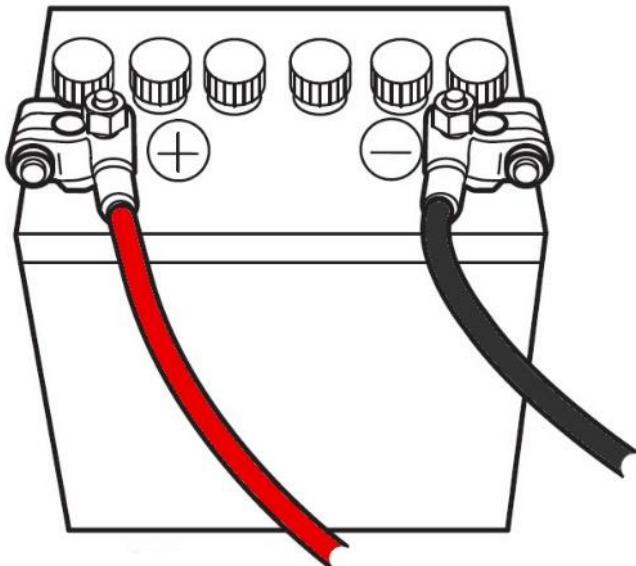
Battery Disconnect

IMPORTANT:

- When disconnect a battery, always remove the negative lead (-) first.
- Do not disconnect the battery leads from the battery while the engine is operating, the electrical parts could be damaged.

1. Disconnect the negative lead (-) from the negative terminal on the battery.

2. Disconnect the positive lead (+).



3. Wipe off any chemical deposits, dirt, or grease.

- See *Battery - Check/Replace/Charge* pg. 10-3 for battery maintenance.
- See *Off-season Storage* pg. 8-1 for considerations on battery storage when not using the engine frequently.

6.3. External Fuel Tank

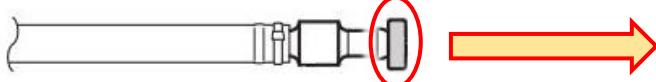
Connect External Fuel Tank

Use the following procedure to connect and pressurize the external fuel tank before daily use or as needed. Disconnect external fuel tank when the engine is not in operation. See *Fill Fuel* pg. 5-2 for information filling the external tank with fuel.

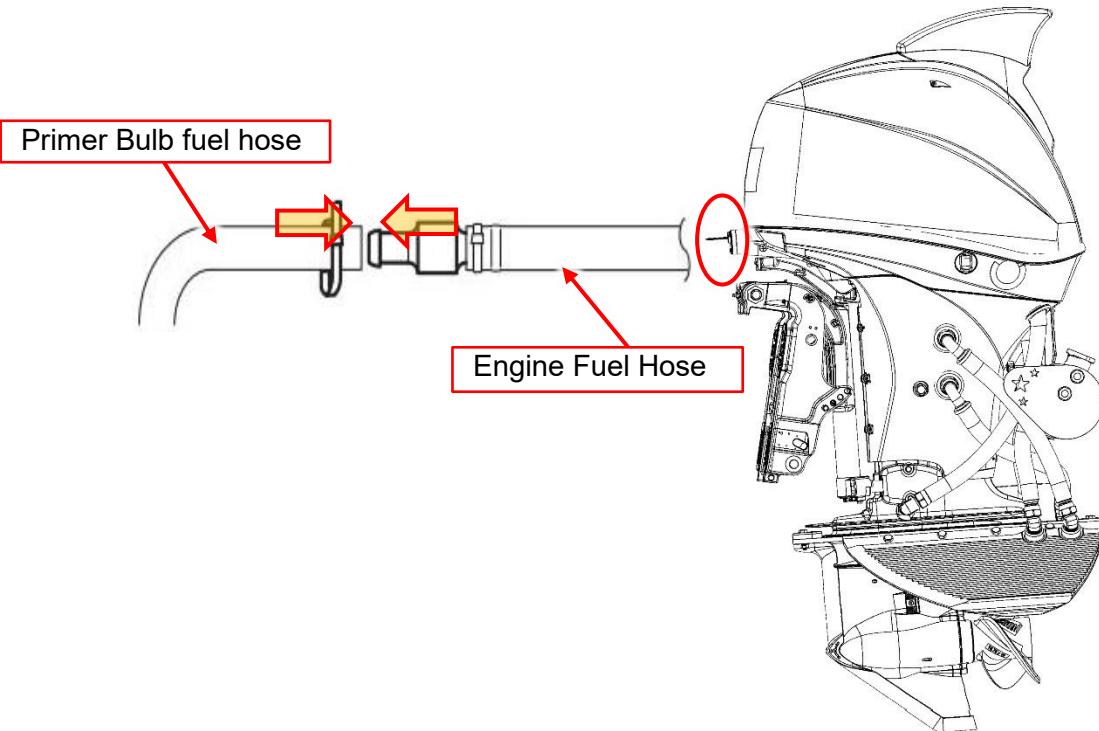
DANGER

Review Gasoline and Engine Exhaust Safety
pg. 2-2 for gasoline hazards.

1. Remove the cap from the fuel joint on the Engine fuel hose.



2. Connect the Engine hose with the Primer Bulb fuel hose and secure with a hose band.



3. Connect the opposite end of the Primer Bulb fuel hose with the external Fuel Tank connector.

IMPORTANT: When using a separate tank, be sure that the fuel line is not kinked and is connected securely.



4. External Fuel Tank is connected.

Pressurize External Fuel Tank

Use the following procedure to pressurize the external fuel tank before daily use or as needed:

- When the engine is cold.
- After the engine has been sitting for a long period of time.

1. Connect the External Fuel Tank with the Engine. See *Connect External Fuel Tank* pg. 6-4.
2. Point the primer bulb arrow mark upwards when priming. Feed fuel to the vapor separator by squeezing the primer bulb until it becomes stiff.

⚠ WARNING: Do not squeeze primer bulb with engine running or when the outboard motor is tilted up to avoid fuel from overflowing.



3. Fuel is primed.

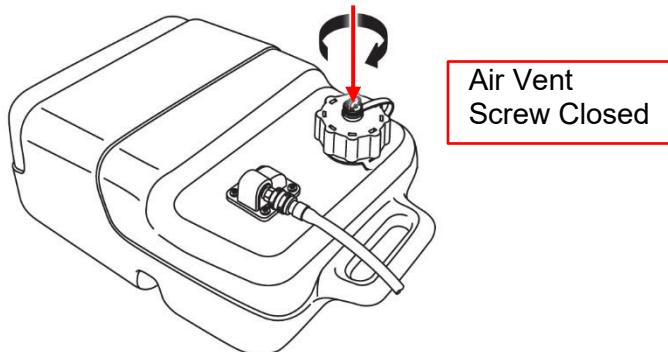
Disconnect External Fuel Tank

Disconnect the external fuel tank after stopping the engine for the day or a long period of time:

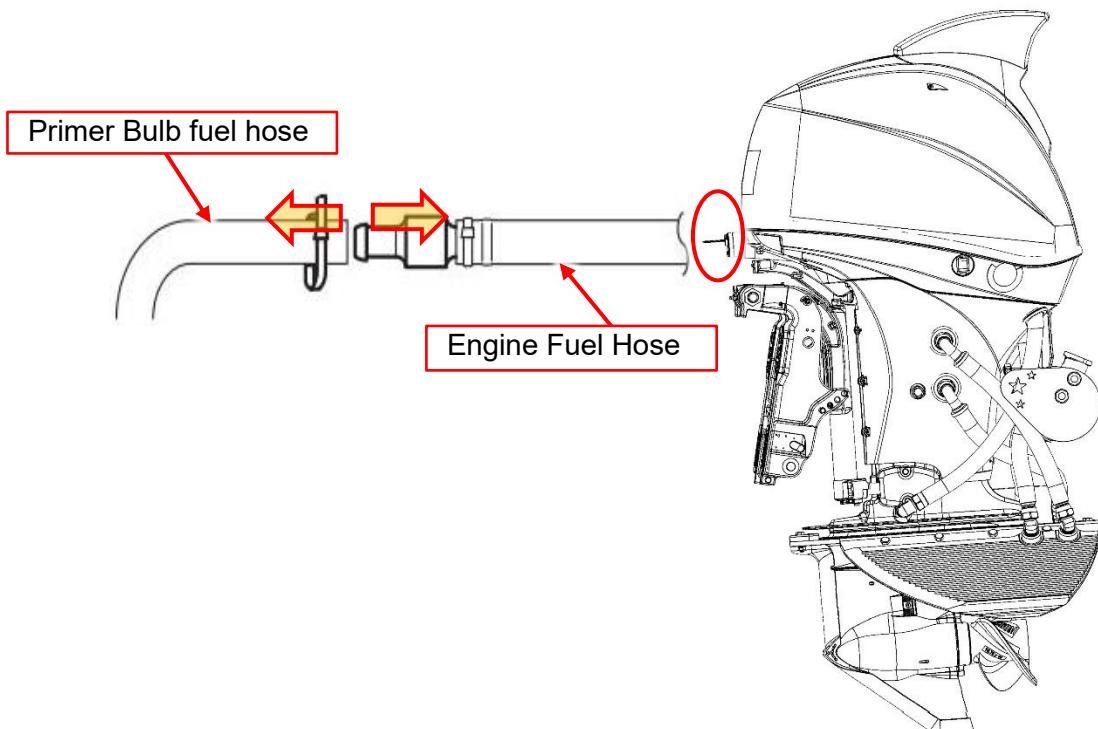
⚠ DANGER ⚠

Review Gasoline and Engine Exhaust Safety
pg. 2-2 for gasoline hazards.

1. Close the air vent screw on the fuel tank cap.



2. Disconnect the fuel connector from the engine and the fuel tank.



3. Immediately clean up any drips or leaks.



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6.4. Starting the Engine

Before starting the Engine, be sure to complete the appropriate inspections and procedures: For emergency starting, see *Emergency Starting* pg. 6-10.

Before starting this procedure:

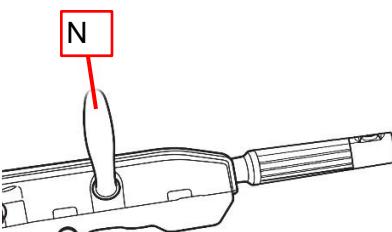
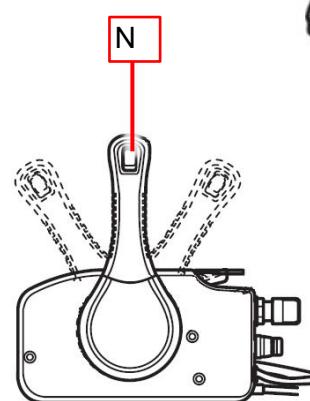
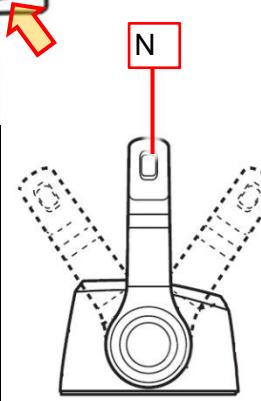
- Inspect Engine:
 - **After Engine has been in storage:** See *Pre-season Check List* pg. 9-1.
 - **Before Daily use:** See *Daily Inspection* pg. 9-2.
- Fill external fuel tank with gas. See *Fill Fuel* pg. 5-2.
- Connect fuel tank to engine. See *Connect External Fuel Tank* pg. 6-4.
- Pressurize external fuel tank. See *Pressurize External Fuel Tank* pg. 6-5.
- Connect the battery. See *Battery Install & Connect* pg. 6-26-1.
- Install the stop switch lock and attach the stop switch lanyard securely to the operator or to the operator's PFD. See *Safety Lanyard & Emergency Stop Switch* pg. 6-1 for more information.

1. Insert the main switch key.
2. Set the control lever to the Neutral position.

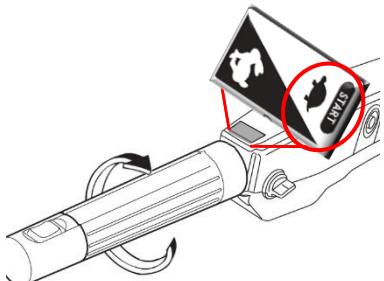
NOTE: For the Side and Top Mount types, engage the neutral lock arm button to move the control lever.

⚠ WARNING: This model is provided with start in gear protection. Start-in-gear protection prevents the engine from starting at anything other than neutral shift. In-gear starting of engine will move the boat immediately, potentially leading to falling or causing passenger(s) to be thrown overboard. If the engine starts in anything other than neutral shift, contact your Freedom Outboard dealer immediately.

Tiller Handle Type	Side Mount Type	Top Mount Type
See <i>Multi-Function Tiller Handle Part Names</i> pg. 3-9	See <i>Side Mount RC Part Names</i> pg. 3-7	See <i>Top Mount RC Part Names</i> pg. 3-8

3. For Tiller Handle Only: Set the throttle grip to START position.



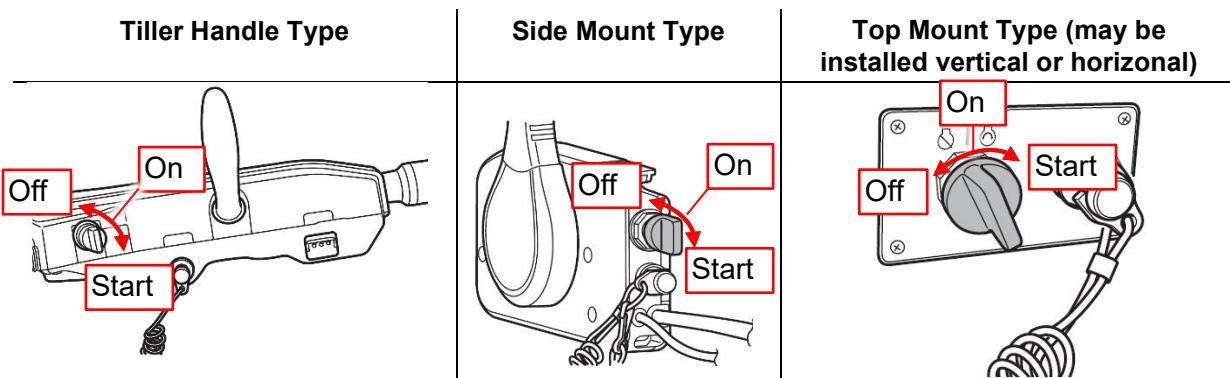
4. Turn the main switch key to ON position.

Confirm warning lamp(s) illuminate and emit a buzzer sound and then the light(s) extinguish. For warning lamp locations, see *Warning Lamp Locations* pg. 3-15.

- For one warning lamp, Lamp A illuminates.
- For three warning lamps, Lamp A, B and C illuminate.

5. Turn the main switch key to START position and release the key when the engine has started. The key returns to the original position, automatically.

IMPORTANT: Do not hold turning starter for more than 5 seconds, or the battery may be consumed, potentially making the engine starting impossible and/or damaging the starter. If cranking over 5 seconds fails to start engine, return main switch to ON, and crank engine again after 10 seconds or more.



6. After the engine is started and before operation, continue to warming the engine procedure. See *Warming the Engine* pg. 6-12

⚠ WARNING: Do not remove or install the top cowl after the engine has been started. The exposed rotating engine parts or moving parts may cause serious injury

IMPORTANT:

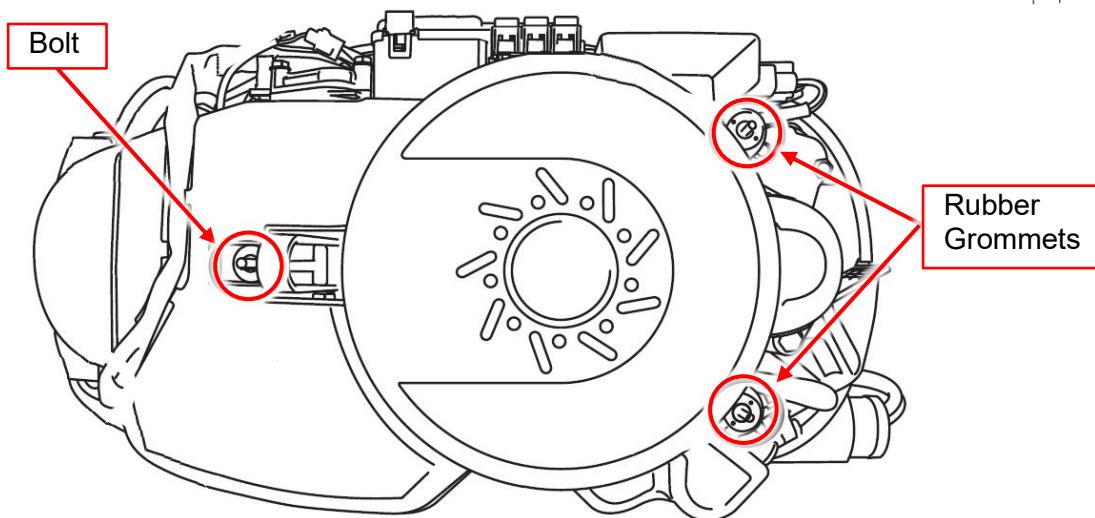
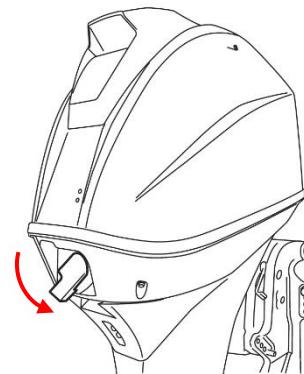
- The top cowl must be installed while the engine is running except in an emergency. If the top cowl is not installed correctly, water splash could damage the engine
- Operating the engine without warm up may shorten the engine's life.

6.5. Emergency Starting

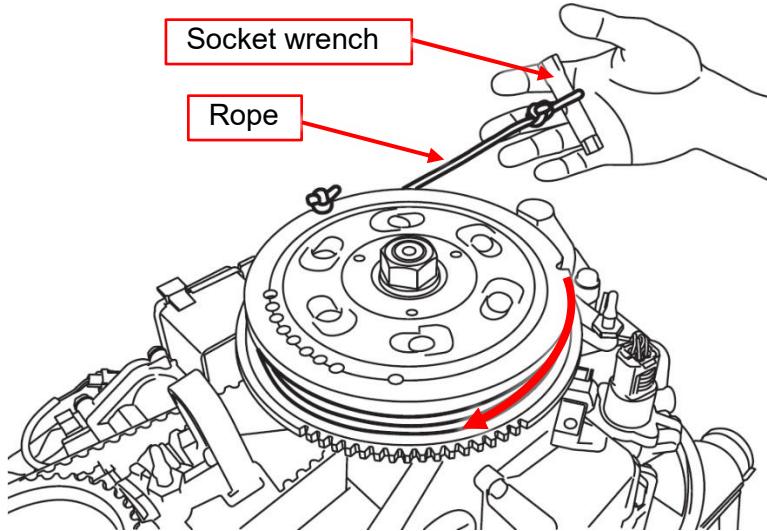
⚠️ WARNING: When the emergency starter rope is used for starting engine:

- Start in gear protection **DOES NOT** work. Be sure the shift is in neutral position. Otherwise, the engine will move the boat immediately and cause personal injury.
- Be careful that your clothes or other items do not get caught in the rotating engine parts.
- To prevent accidents and injury by rotating parts, do not re-attach the flywheel cover and the top cowl after the engine has been started.
- Do not pull the starter rope if any bystander is behind. The action can injure the bystander.
- Attach engine stop switch lanyard to clothing or any part of body such as a wrist, arm before starting engine the outboard motor.

1. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.
2. Remove bolt on coolant pump bracket.
3. Push flywheel cover off of the rubber grommets.
4. Remove flywheel and set aside.
5. Replace bolt and secure onto coolant pump bracket.



6. Insert the knotted end of the starter rope into the notch in the flywheel and wind the rope around the flywheel several turns clockwise.
7. Tie a loop in the other end of the emergency starter rope and attach socket wrench that is included in the accessories box (see *Accessories Box* pg. 3-2).



8. Follow the Before starting this procedure and Steps 1-4 of Starting the Engine. See *Starting the Engine* pg. 6-8.
9. Pull the starter handle slowly until you feel engagement, keep pulling till you feel less resistance. Then pull it quickly.
10. After the engine starts, DO NOT reattach the flywheel cover or re-install the top cowl.

⚠️ WARNINGS:

- Do not install the top cowl after the engine has been started.
- The exposed rotating engine parts or moving parts may cause serious injury.

11. After the engine is started and before operation, continue to the warming the engine procedure. See *Warming the Engine* pg. 6-12.

6.6. Warming the Engine

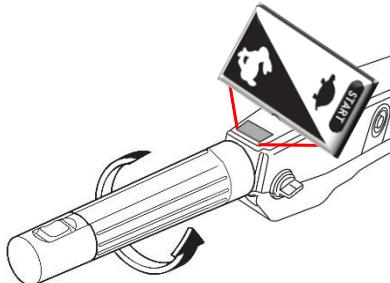
Tiller Handle type

Warm the engine at low engine speeds listed below. This allows the lubricating oil to circulate to all parts of the engine.

IMPORTANT: Operating the engine without warm up shortens the engine's life.

NOTE: Idle speed may be higher during warmup. If shifted to Forward or Reverse during warm up, it may be difficult to shift back to neutral. In such case, refer to the Forward & Reverse Accelerations *Best Practices & Safety Precautions* pg. 6-16 for recovery steps.

1. Prepare and start the engine. See *Starting the Engine* pg. 6-8.
2. With the shift lever in neutral, rotate the throttle grip forward **slowly** to open the throttle.

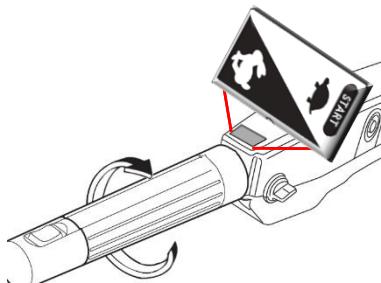


3. Leave the throttle grip in place for:
 - 3 minutes: above 5°C (41°F)
 - 5 minutes at 2000 min⁻¹(rpm): below 5°C (41°F)

NOTE: The idling speed automatically increases depending on the engine temperature. When the engine reaches normal operating temperature, it returns to the specified idling speed of 850 min⁻¹(rpm).

NOTE: Idle speed may be higher during warmup. If shifted to Forward or Reverse during warm up, it may be difficult to shift back to neutral. In such case, refer to the Forward & Reverse Accelerations *Best Practices & Safety Precautions* pg. 6-16 for recovery steps.

4. Rotate the throttle grip back to the START position.



5. Engine is warmed up.

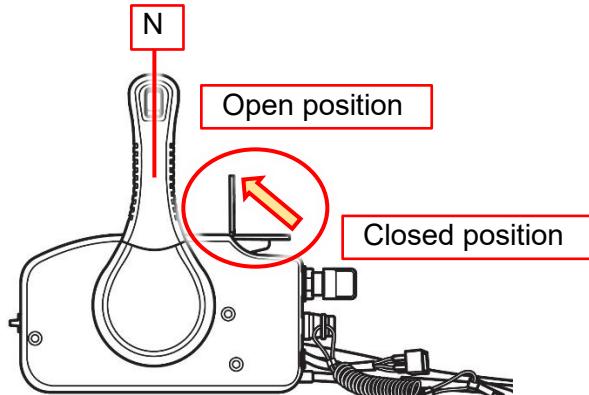
Side mount RC type

The Side-mount RC type uses the free throttle lever. Warm the engine at low engine speeds listed below. This allows the lubricating oil to circulate to all parts of the engine.

IMPORTANT: Operating the engine without warm up shortens the engine's life.

1. Prepare and start the engine. See *Starting the Engine* pg. 6-8.
2. With the control lever in neutral, move the free throttle lever upward to open the throttle. The free throttle lever is inoperative unless the control lever is in neutral.

NOTE: See *Side Mount RC Part Names* pg. 3-7 for visuals on side mount part names.



3. Leave the free throttle lever fully opened for:

- 3 minutes: above 5°C (41°F)
- 5 minutes at 2000 min⁻¹(rpm): below 5°C (41°F)

NOTE: The idling speed automatically increases depending on the engine temperature. When the engine reaches normal operating temperature, it returns to the specified idling speed of 850 min⁻¹(rpm).

NOTE: Idle speed may be higher during warmup. If shifted to Forward or Reverse during warm up, it may be difficult to shift back to neutral. In such case, refer to the Forward & Reverse Accelerations *Best Practices & Safety Precautions* pg. 6-16 for recovery steps.

4. Close the free throttle lever downward to close the throttle.

NOTE: The control lever is inoperative unless the free throttle lever is returned to the fully closed position.

5. Engine is warmed up.

Top mount RC type

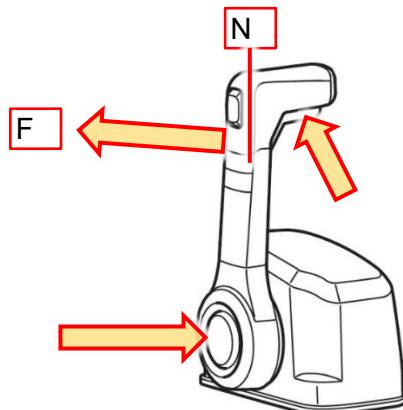
Using the neutral throttle button. Warm the engine at low engine speeds listed below. This allows the lubricating oil to circulate to all parts of the engine. Operating the engine without warm up shortens the engine's life.

IMPORTANT: Operating the engine without warm up shortens the engine's life.

NOTE: Idle speed may be higher during warmup. If shifted to Forward or Reverse during warm up, it may be difficult to shift back to neutral. In such case, refer to the Forward & Reverse Accelerations *Best Practices & Safety Precautions* pg. 6-16 for recovery steps.

1. Prepare and start the engine. See *Starting the Engine* pg. 6-8.
2. With the control lever is in neutral, push and hold the neutral throttle button.
3. While holding the neutral throttle button, engage the neutral lock arm button and move the control lever forward to throttle up the engine.

NOTE: See *Top Mount RC Part Names* pg. 3-8 for visuals on side mount part names.



4. Once the control lever is in place, the neutral lock arm and neutral throttle buttons may be released. The neutral throttle button remains engaged.
5. Leave the control lever in place for:
 - 3 minutes: above 5°C (41°F)
 - 5 minutes at 2000 min⁻¹(rpm): below 5°C (41°F)

NOTE: The idling speed automatically increases depending on the engine temperature. When the engine reaches normal operating temperature, it returns to the specified idling speed of 850 min⁻¹(rpm).

NOTE: Idle speed may be higher during warmup. If shifted to Forward or Reverse during warm up, it may be difficult to shift back to neutral. In such case, refer to the Forward & Reverse Accelerations *Best Practices & Safety Precautions* pg. 6-16 for recovery steps.

6. Engage the neutral lock arm button and pull the control lever back to neutral.
7. Release the neutral lock arm button. The neutral throttle button resets automatically in the neutral position.
8. Engine is warmed up.



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6.7. Forward & Reverse Accelerations

Best Practices & Safety Precautions

DANGER

DO NOT shift at high speeds or control may be lost. Passengers may fall, leading to serious personal injury!

! WARNINGS: Before shifting into Forward or Reverse:

- Verify that boat is properly unmoored.
- Verify the outboard motor can be steered fully to the right and left.
- Make sure that no swimmer(s) is around the boat.
- Verify the switch lanyard is attached to the operator. See *Safety Lanyard & Emergency Stop Switch* pg. 6-1.
- Engine is properly warmed up. See *Warming the Engine* pg. 6-12.

! WARNINGS: Shifting into Reverse:

- Do not shift into Reverse during planing, or control will be lost leading to serious personal injury, boat may swamp, and/or hull may be damaged.
- Do not shift into Reverse during cruising, or control may be lost, falling or causing passenger(s) to be thrown overboard, leading to serious personal injury.

IMPORTANT:

- Frequent shifting to Forward or Reverse can accelerate wear or degradation of parts. In such case, replace gear oil earlier than the period specified. See *Gear Oil - Check & Replace* pg. 10-22.
- DO NOT shift at high speeds or gear and clutch damage may occur. Engine must be at a slow idle speed before shifting.
- Do not increase engine speed unnecessarily when the shift is in Neutral and Reverse or engine damage may occur.
- When operating multiple outboard motors in reverse at more than the lowest speed, be sure that all engines are running.

NOTE: Idle speed may be higher during warmup. If shifted to Forward or Reverse during warm up, it may be difficult to shift back to neutral. In such case:

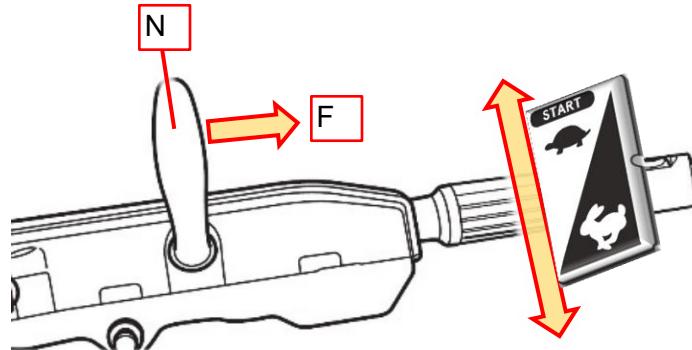
- a) Stop engine. See *Stopping the Engine* pg. 6-22.
- b) Shift to neutral.
- c) Restart engine. See *Starting the Engine* pg. 6-8.
- d) Warm up. See *Warming the Engine* pg. 6-12 for more information.

Tiller Handle Type

IMPORTANT: Do not force the shift when the throttle grip is not in the fully closed position, otherwise the steering system and/or shifting mechanism may be damaged. The control lever is inoperative unless the throttle grip is in the fully closed position (Multi-function tiller type).

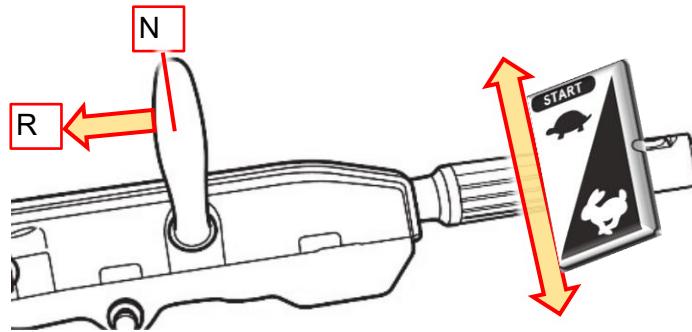
Forward

1. Turn the throttle grip gradually back to reduce engine to trolling or idling speed.
2. Quickly pull the shift lever back to the Forward (F) position.
3. Gradually turn throttle grip forward to increase speed.



Reverse

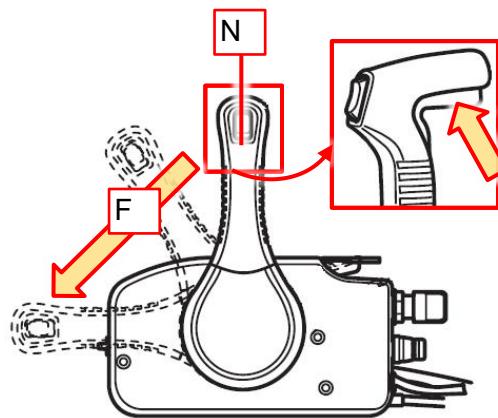
1. Turn the throttle grip gradually back to reduce engine to trolling or idling speed.
2. Quickly push the shift lever forward to the Reverse (R) position.
3. Gradually turn throttle grip forward to increase speed.



Side Mount RC Type

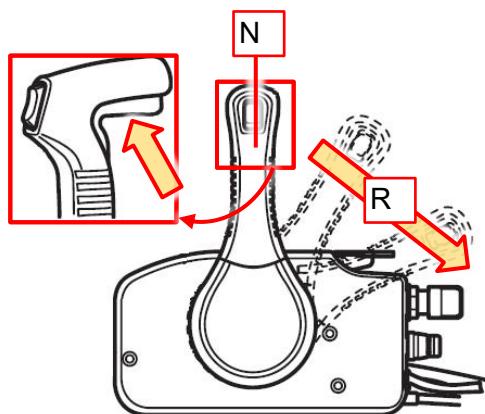
Forward

1. Engage the neutral lock arm button and quickly push the control lever forward to the F position (32°), where the gear connects.
2. Continue with gradual forward motion to open the throttle.



Reverse

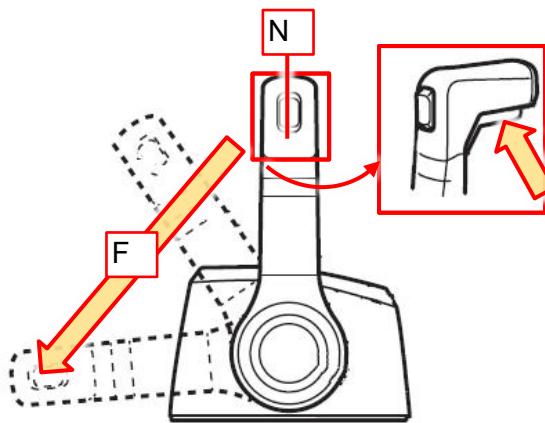
1. Engage the neutral lock arm button and quickly pull the control lever back to the R position (32°), where the gear connects.
2. Continue with gradual rearward motion to open the throttle.



Top Mount RC Type

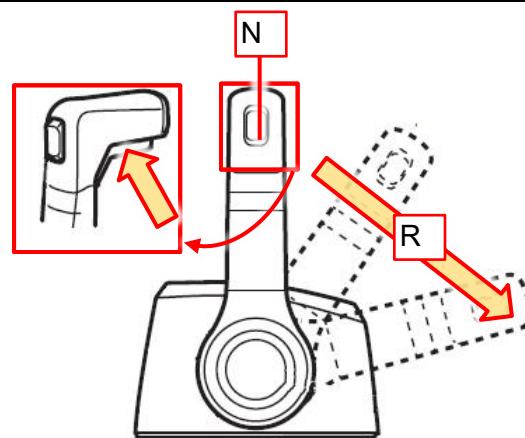
Forward

1. Engage the neutral lock arm button and quickly push the control lever forward to the F position (35°), where the gear connects.
2. Continue with gradual forward motion to open the throttle.



Reverse

1. Engage the neutral lock arm button and quickly pull the control lever back to the R position (35°), where the gear connects.
2. Continue with gradual rearward motion to open the throttle.



6.8. Engine Speeds

Best Practices & Safety Precautions

⚠ DANGER ⚠

DO NOT make sudden shifts between acceleration and deceleration, or steering control may be lost. Passengers may fall or be thrown overboard leading to serious personal injury!

See *Forward & Reverse Accelerations* pg. 6-16 for more information on forward or reverse acceleration or deceleration.

IMPORTANT: Operating the engine without warm up shortens the engine's life.

NOTE: See *Warming the Engine* pg. 6-12 for more information on idling speed variations during warm-up.

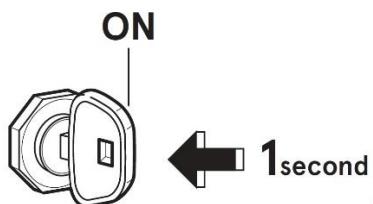
Trolling Speed Control

NOTE: The trolling speed control function does not operate when battery voltage is lower than specified. See *Battery - Check/Replace/Charge* pg. 10-3 for more information on battery voltage. Engine idle and trolling engine speed is set to $850 \text{ min}^{-1}(\text{rpm})$ automatically.

1. Set the engine to idling or trolling speed.
2. Press the main switch key in for one second to change trolling speed setting to the next speed.

Each time the main switch key is pressed in for one second, the trolling speed toggles to the next speed as shown in the image below.

NOTE: Trolling speed control function resets, and trolling speed is set to $850 \text{ min}^{-1}(\text{rpm})$ when the engine speed is increased above $3,000 \text{ min}^{-1}(\text{rpm})$ or after the engine restarted.



NOTE: Buzzer emits **one** short beep when the engine speed is set to $650 \text{ min}^{-1}(\text{rpm})$, indicating the **minimum** trolling speed is set.

Starting

$850 \text{ min}^{-1}(\text{rpm}) \rightarrow 750 \text{ min}^{-1}(\text{rpm}) \rightarrow 650 \text{ min}^{-1}(\text{rpm})$

$950 \text{ min}^{-1}(\text{rpm}) \leftarrow 850 \text{ min}^{-1}(\text{rpm}) \leftarrow 750 \text{ min}^{-1}(\text{rpm})$

NOTE: Buzzer makes **two** short sounds when the engine speed is set to $950 \text{ min}^{-1}(\text{rpm})$, indicating the **maximum** trolling speed is set.

6.9. Stopping the Engine

Best Practices & Safety Precautions

⚠ DANGER ⚠

Serious injury is likely if a person in the water makes contact with a moving boat, gear housing, propeller, or any solid device rigidly attached to a boat or gear housing. Shift the outboard motor to neutral and shut off when your boat is in the immediate vicinity of people in the water.

⚠ DANGER ⚠

If the engine stop switch lanyard is accidentally disconnected from the engine while boat is moving, the sudden stop of the engine may cause loss of steering control. Passengers or objects may fall or be thrown overboard leading to serious personal injury.

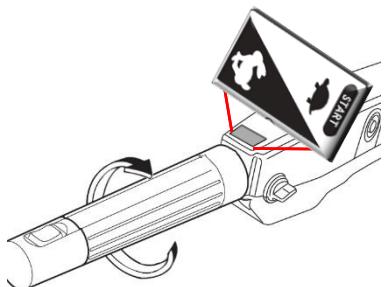
⚠ DANGER ⚠

Fuel leakage is a fire or explosion hazard, which can cause serious injury or death! Disconnect the fuel connectors except when operating the engine.

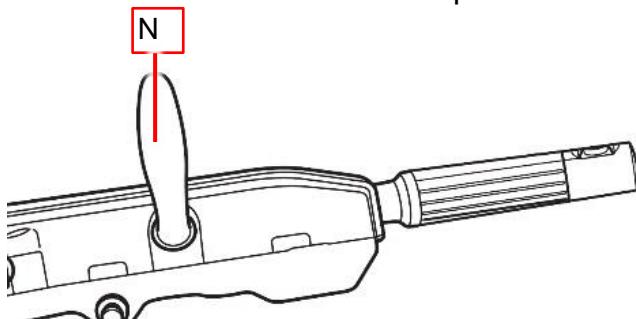
Tiller Handle Type

IMPORTANT: When running with multiple outboard motors, if any engine has stopped, be sure to tilt the outboard motor up and keep its propeller out of the water. Otherwise, water could enter the engine and cause damage to it.

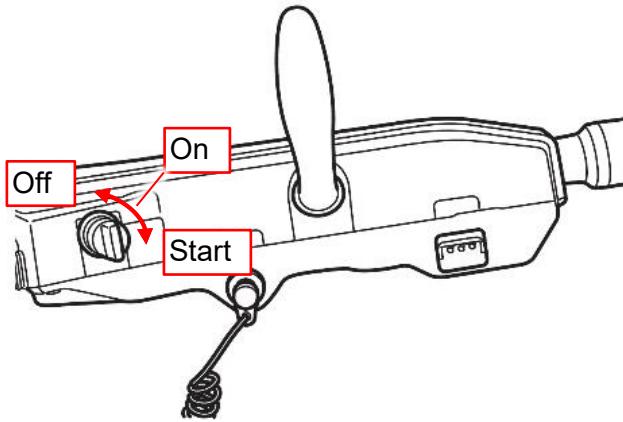
1. Turn the throttle grip to the slow position.



2. Put the shift lever in the Neutral position.



3. Run the engine for 2-3 minutes at idling speed for cooling down if it has been running at full speed.
4. Turn the main switch key to the OFF position.



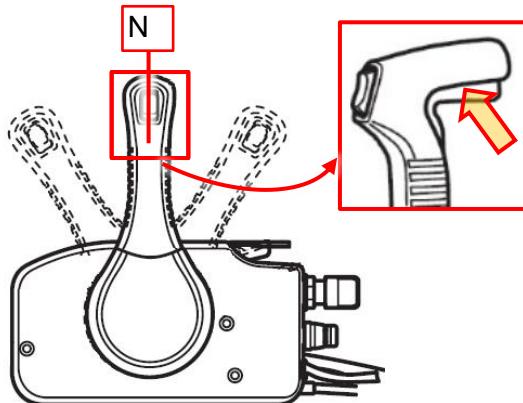
5. After stopping the engine for the day or a long period of time:

- Disconnect the external fuel tank from the engine. See *Disconnect External Fuel Tank* pg. 6-6.
- Disconnect the battery. See *Battery Disconnect* pg. 6-3 .

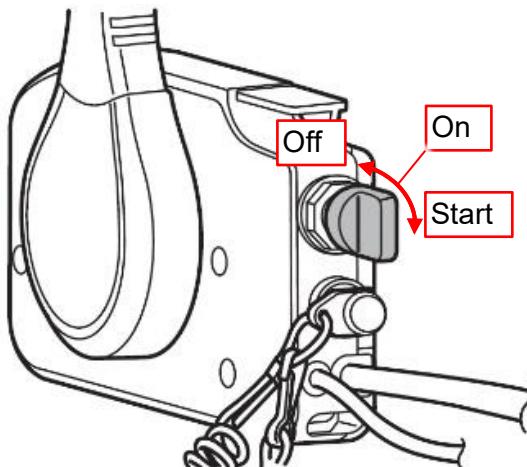
Side Mount RC Type

IMPORTANT: When running with multiple outboard motors, if any engine has stopped, be sure to tilt the outboard motor up and keep its propeller out of the water. Otherwise, water could enter the engine and cause damage to it.

1. Engage the neutral lock arm button and set the control lever to the Neutral position.



2. Run the engine for 2-3 minutes at idle speed for cooling down if it has been running at full speed.
3. Turn the main switch key to the OFF position.

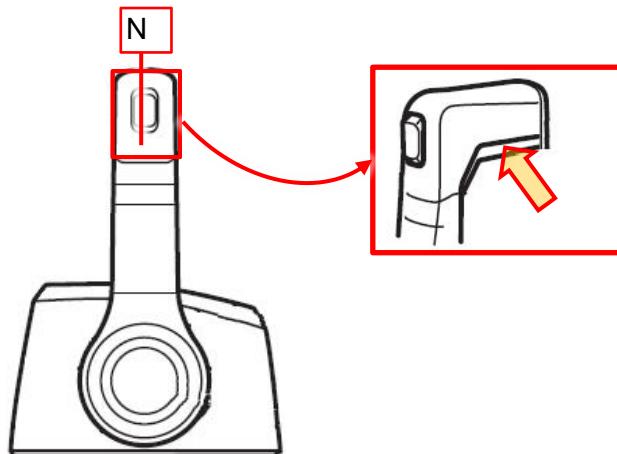


4. After stopping the engine for the day or a long period of time:
 - Disconnect the external fuel tank from the engine. See *Disconnect External Fuel Tank* pg. 6-6.
 - Disconnect the battery. See *Battery Disconnect* pg. 6-3 .

Top Mount RC Type

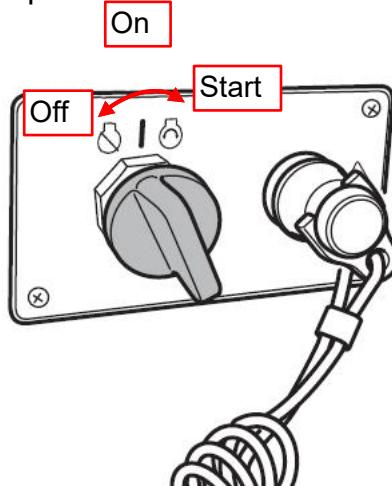
IMPORTANT: When running with multiple outboard motors, if any engine has stopped, be sure to tilt the outboard motor up and keep its propeller out of the water. Otherwise, water could enter the engine and cause damage to it.

1. Engage the neutral lock arm button and set the control lever to the Neutral position.



2. Run the engine for 2-3 minutes at idle speed for cooling down if it has been running at full speed.
3. Turn the main switch key to the OFF position.

NOTE: Top Mount Switch orientation may be vertical or horizontal.



4. After stopping the engine for the day or a long period of time:
 - Disconnect the external fuel tank from the engine. See *Disconnect External Fuel Tank* pg. 6-6.
 - Disconnect the battery. See *Battery Disconnect* pg. 6-3.

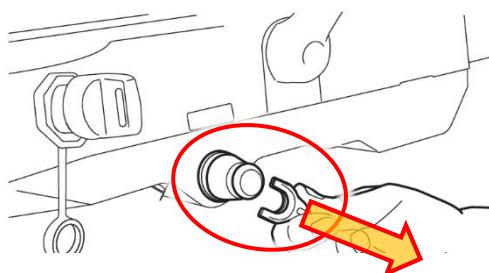
6.10. Emergency Engine Stopping

⚠ DANGER ⚠

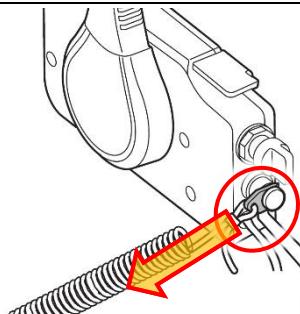
If the engine stop switch lanyard is accidentally disconnected from the engine while boat is moving, the sudden stop of the engine may cause loss of steering control. Passengers or objects may fall or be thrown overboard leading to serious personal injury.

To emergency stop the engine, pull the Stop Switch Lock:

Tiller Handle Type

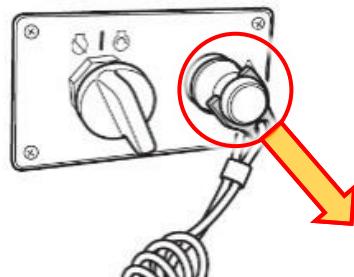


Side Mount RC Type



Top Mount RC Type

NOTE: Top Mount Switch may be oriented in the vertical or horizontal position.

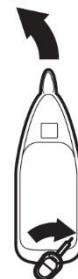


6.11. Steering

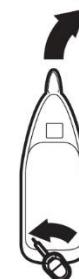
⚠️ WARNING: Sudden steering may cause passenger(s) to be thrown overboard or fall.

Tiller Handle Type

Left Turn:
turn the handle
to the **right**



Right Turn:
turn the handle
to the **left**



Side Mount RC Type

Left Turn: turn
the handle to
the **left**



Right Turn:
turn the handle
to the **right**



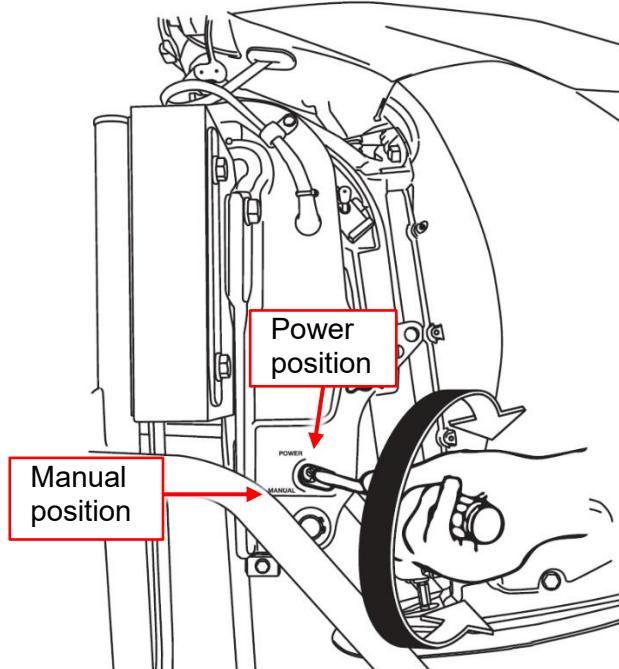
Top Mount RC Type

6.12. Power Trim Manual Relief Valve

If the battery is dead, and the power trim & tilt switch is inoperative, the Manual Relief Valve may be used to tilt the outboard motor manually. Also, trapped air in the Power Trim and Tilt unit may cause poor tilting movement and noise. The Manual Relief Valve may be used to remove trapped air.

1. Use a flat head screwdriver to move the screw from the Power to the Manual position.
Manual Relief Valve specified torque: 1.8N-m (1.4 ft-lb, 0.18 kgf-m)

⚠ WARNING: Before opening the manual relief valve, make sure nobody is under the outboard motor. If the outboard motor is in the tilted up position with the manual relief valve loosened, the outboard motor will tilt down suddenly.



2. The motor may now be tilted.
3. The Manual Relive valve must be returned to the Power position before operation. Use a flat head screwdriver to move the screw from the Manual to the Power position.

Manual Relief Valve specified torque: 1.8N-m (1.4 ft-lb, 0.18 kgf-m)

⚠ WARNING: Close the manual relief valve before operating the outboard motor. If the manual relief valve is not closed, the outboard motor will tilt up when operated in reverse.

6.13. Power Trim Up & Down

The engine may be minimally trimmed up or down during operation to adjust for load conditions and water depth. The Power Trim may also be used to lock the engine into a fully tilted up position while not in operation.

Best Practices and Safety Precautions

⚠️ WARNINGS:

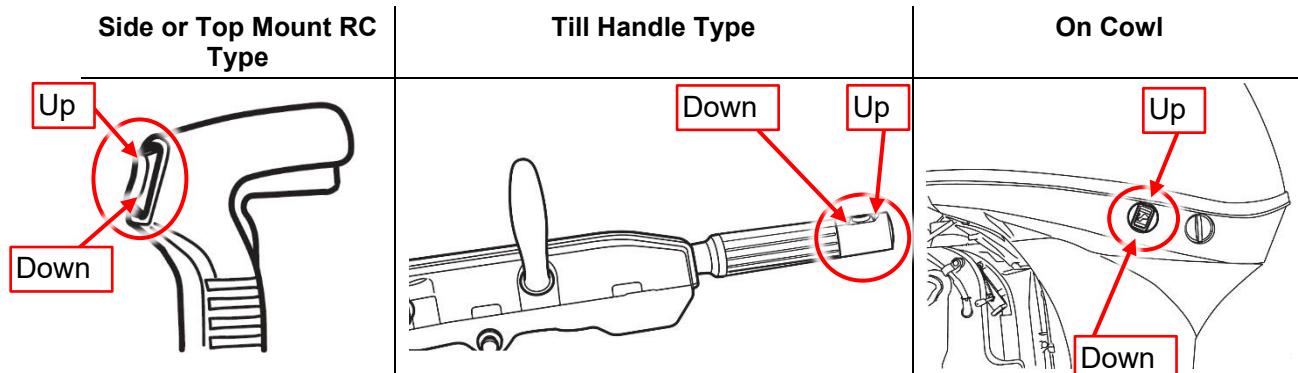
- Do not tilt outboard motor up or down when swimmer(s) or passenger(s) are near to prevent them from being caught between outboard motor body and clamp bracket.
- When tilting up or down, DO NOT place your hand between the swivel bracket and the stern bracket.
- When tilting the outboard motor fully up for more than a few minutes, disconnect the fuel hose first, or fuel may leak, potentially catching fire.

NOTE:

- The Tilt up or down functionality is available despite main switch being ON or OFF.
- See *Power Trim Manual Relief Valve* pg. 6-28 to manual tilt the engine if the battery is dead.

Tilt Up or Down during Operation

1. Review the Power Trim *Best Practices and Safety Precautions* pg. 6-29 for important information.
2. Operate the Power Trim & Tilt switch to tilt the outboard motor up or down to adjust for load conditions and water depth.

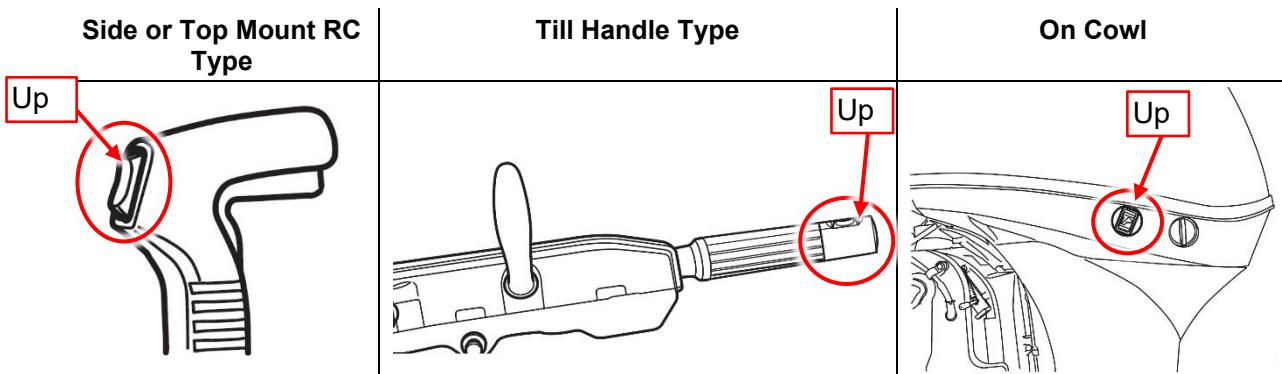


Tilting & Locking/Unlocking while not in Operation

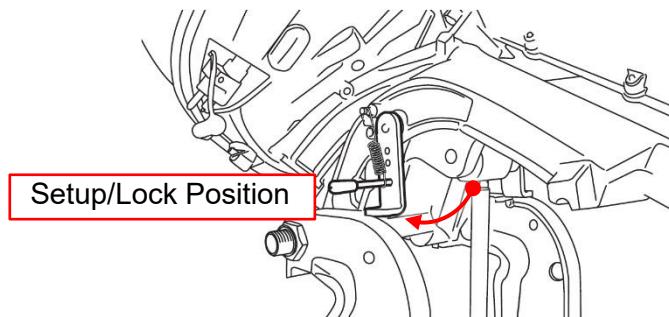
Tilt Up & Lock

IMPORTANT: Do not fully tilt up the outboard motor while engine operates, or no coolant may be fed, leading to engine seizure due to overheating.

1. Review the Power Trim *Best Practices and Safety Precautions* pg. 6-29 for important information.
2. Stop the engine. See *Stopping the Engine* pg. 6-22.
3. Operate the Power Trim & Tilt switch and tilt the outboard motor fully up.

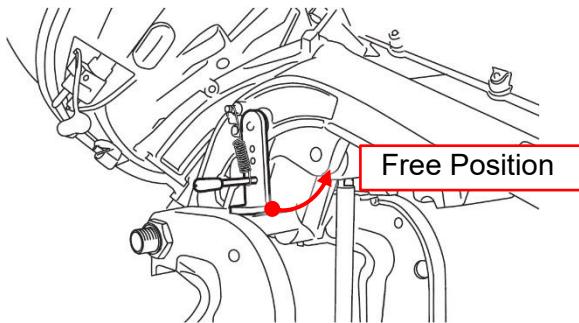


4. Move the Tilt Stopper into the machined groove (setup position) as displayed below to lock the tilt.

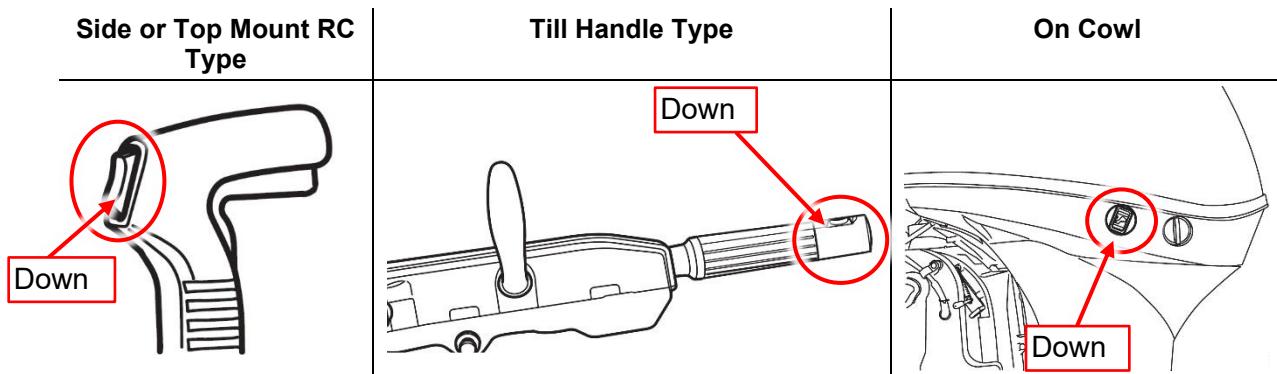


Unlock & Tilt Down

1. Review the Power Trim *Best Practices and Safety Precautions* pg. 6-29 for important information.
2. Release tilt stopper from the machined groove. Tilt stopper springs back to the free position.



3. Tilt the outboard motor down.



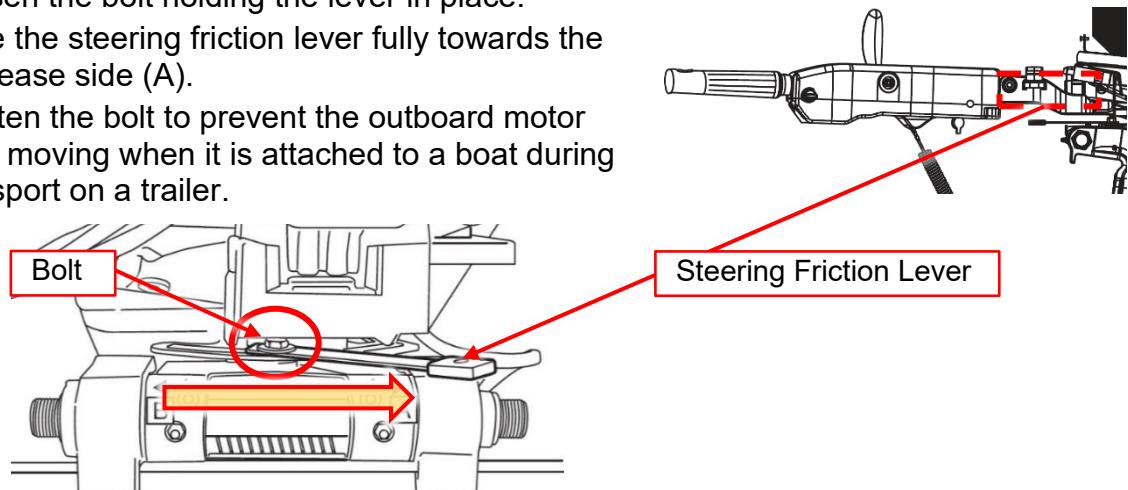
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7. Moving the Outboard Motor

7.1. Trailering

Use the following general guidelines when trailering your boat with the outboard motor attached.

1. After stopping the engine, disconnect the fuel lines and battery cords. See *Stopping the Engine* pg. 6-22.
2. **For Tiller Handle Types only:**
 - a) Loosen the bolt holding the lever in place.
 - b) Slide the steering friction lever fully towards the decrease side (A).
 - c) Tighten the bolt to prevent the outboard motor from moving when it is attached to a boat during transport on a trailer.

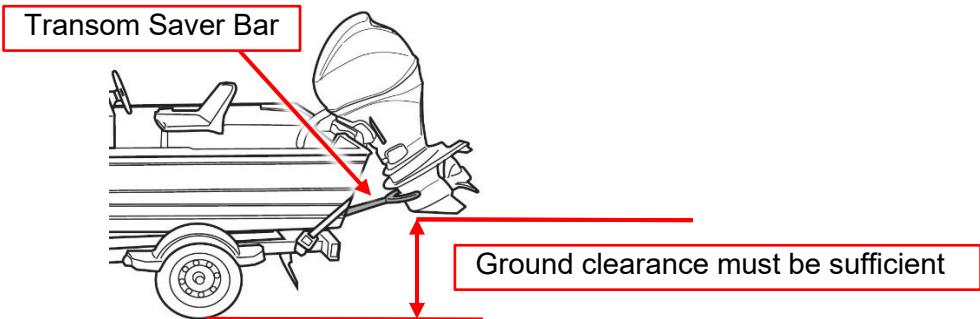


3. A transom saver bar is recommended or keep the motor in the normal running vertical position.

⚠️ WARNING: DO NOT go under outboard motor tilted up even if it is supported by support bar, or accidental fall of outboard motor could lead to personal injury.

⚠️ IMPORTANT:

- Trailering in the tilted position may cause damage to the motor, boat, etc.
- DO NOT use the tilt stopper while trailering. The tilt stopper is only intended to support the outboard motor while docked, beached, stored, etc.

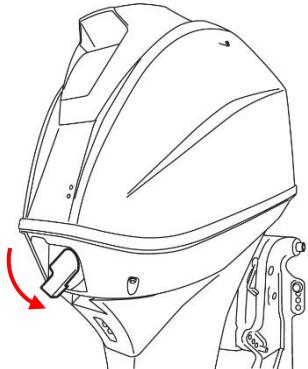


7.2. Removing and Moving the Motor

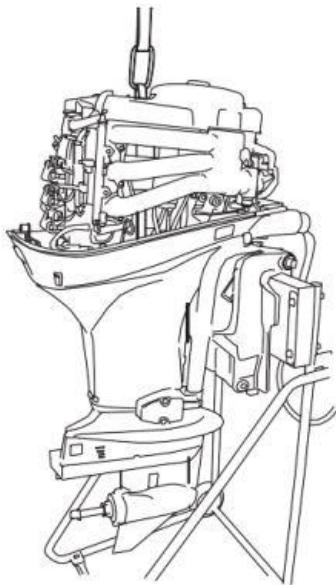
⚠ **WARNING:**

- To avoid personal injury or damage of equipment, make sure the allowable lifting capacity of the hoist is at least twice the weight of the outboard motor.
- Do not allow the lift hook or chain from the hoist to come in contact with any part of the outboard motor during lifting.
- Engine may be hot immediately after operation and could cause burns if came in contact. Allow engine to cool down before attempting to carry the outboard

1. After stopping the engine, disconnect the fuel lines and battery cords. See *Stopping the Engine* pg. 6-22.
2. Remove the top cowl. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.



3. Attach the hoist hooks to the engine hanger.

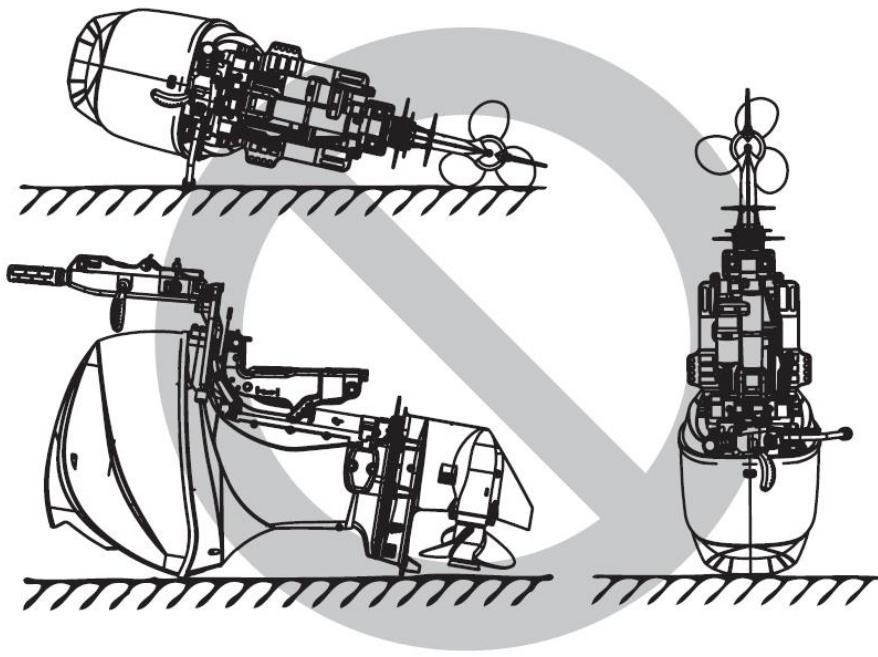


4. Remove the outboard motor from boat.

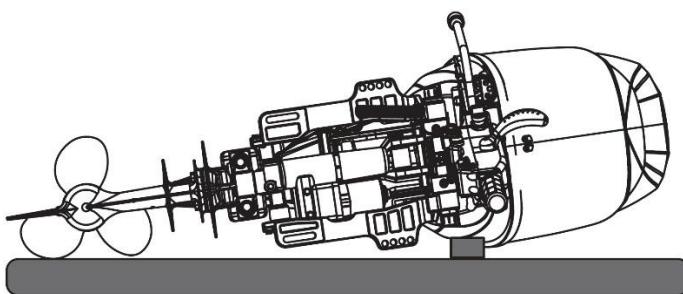
5. Keep the outboard motor in a vertical position when moving. Attaching to an outboard motor stand is recommended for keeping the outboard motor vertical both during transport and storage.

IMPORTANT:

- Do not give a shock to an outboard motor during transportation.
- Do not carry outboard motor in any of the position shown below. Otherwise, engine oil or coolant may enter the cylinder and cause engine problems. Property damage could result from leaking oil.

**IMPORTANT:** If the outboard motor must be laid down:

- Be sure to drain the remaining fuel in the fuel line and vapor separator and coolant. See *Fuel System Draining* pg. 10-12 and *Coolant – Drain & Replace* pg. 10-20.
- When laying down the outboard motor, place port-side down on a cushion or any softer surface as shown below.
- Elevate the power unit 2 inches to 4 inches if traveling to avoid oil spillage.



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8. Off-season Storage

Before you put your outboard motor in storage, it is a good opportunity to have it serviced and prepared by your Freedom Outboard dealer. For guidelines and procedures removing the motor before or after the off-season storage steps, see *Removing and Moving the Motor* pg. 7-2.

1. If a fuel stabilizer is not normally used but your motor is being prepped for off-season storage, it is recommended to add a good fuel stabilizer to the fuel tank and run the fuel through the motor before draining.

IMPORTANT: Gasoline that is kept in the vapor separator for a long time allows the build up of gum and varnish on the fuel separator and other components, eventually causing the float valve to stick and restricting fuel flow. A good fuel stabilizer lessens these effects.

- a) Fill the tank with gas. See *Fill Fuel* pg. 5-2.
- b) Follow the instructions on the Fuel Stabilizer Additive manufacturer's label when adding the fuel stabilizer.
- c) Run the outboard motor for 10 minutes to completely replace any old fuel with the fuel with additive.
2. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.
- ⚠ **WARNING:** You may be injured from high engine temperatures if you attempt maintenance directly after operation.
3. Disconnect the external fuel tank from the engine. See *Disconnect External Fuel Tank* pg. 6-6.
4. Drain the fuel. See *Fuel System Draining* pg. 10-12.
5. Prepare the Spark Plugs for off-season storage.
 - a) Remove the spark plugs and inspect. See *Spark Plug Inspection & Replacement* pg. 10-28.
 - b) Add a teaspoon of engine oil or spray storage oil into each combustion chamber through the spark plug holes.
 - c) Put a cloth over the spark plug hole and wipe up any spilled engine oil.
 - d) Remove the stop switch lock.
- ⚠ **WARNING:** Removing the stop switch lock prevents ignition of the spark plugs.
- e) Crank the starter motor several turns to lubricate inside the spark plug cylinder.
- f) Replace the spark plugs. See *Spark Plug Inspection & Replacement* pg. 10-28.
6. Change the engine oil. See *Engine Oil & Oil Filter - Replace* pg. 10-6.
7. Change the gear oil in the gear case. See *Gear Oil - Check & Replace* pg. 10-22.
8. Apply grease to grease points. See *Grease Points* pg. 10-34.

Pre-Season Check List

9. Disconnect and remove battery. See *Battery Disconnect* pg. 6-3.
 - a) Disconnect the battery cables and be sure to remove the negative terminal first.
 - b) Wipe off any chemical deposits, dirt, or grease.
 - c) Apply grease to the battery terminals.
 - d) Charge the battery completely before storing it for off-season.
 - e) Recharge the battery once a month to prevent it from discharging and the electrolyte from deteriorating.
 - f) Store the battery in a dry place.

 **WARNING:** Place the battery away from any source of fire, sparks and open flames such as burners, welding equipment or fuel tank.

10. Clean the motor. See *Cleaning the Outboard Motor* pg. 10-2.
11. It is recommended that the outboard motor be stored vertically in a dry place. See *Removing and Moving the Motor* pg. 7-2.
12. Record all maintenance and storage activities in your Freedom Outboard Maintenance Log.

9. Inspection Schedules

9.1. Pre-delivery Inspection

Make sure the Pre-delivery inspection has been properly completed by the Freedom Outboard Authorized Dealer and you have received a completed and signed copy of the Pre-delivery inspection (PID) form.

9.2. Pre-season Check List

The following steps must be taken when first using the engine after off season storage.

1. Check that the shift and throttle function properly. Be sure to turn the propeller shaft when checking the shift function or else the shift linkage may be damaged.
1. Check the battery. See *Battery - Check/Replace/Charge* pg. 10-3.
2. Check that the battery is secure and the battery cables are properly installed. See *Battery Install & Connect* pg. 6-2.
3. If the engine oil was not changed as part of off-season storage (see your maintenance log), change the engine oil. See *Engine Oil & Oil Filter - Replace* pg. 10-6.
4. Before starting the engine, disconnect the stop switch lock and crank the motor approximately 3 times in 3 seconds to prime the engine oil pump.
5. Fill fuel tank completely. See *Fill Fuel* pg. 5-2.
6. Check and refill coolant tank. See *Coolant - Check & Add* pg. 10-18.
7. Start the engine and warm up the engine for 3 minutes in the NEUTRAL position. See *Warming the Engine* pg. 6-12.
8. Run the engine for 5 minutes at the slowest speed.
9. Run the engine for 10 minutes at half throttle. The oil used for storage inside the engine will be circulated out to assure optimum performance.

9.3. Daily Inspection

Perform the following checks before and after use.

⚠ DANGER ⚠

DO NOT use the outboard motor if any abnormalities are found during pre-operation check otherwise it could result in severe damage to the motor or severe personal injury

Item	Points to Check	Remedy
Fuel System	<ul style="list-style-type: none"> Check the amount of fuel in the tank. 	Replenish
	<ul style="list-style-type: none"> Check for debris or water in the fuel filters. 	Clean or replace if necessary
	<ul style="list-style-type: none"> Check the rubber hoses for fuel leakage. 	Replace if necessary
Fuel Tank Cap	<ul style="list-style-type: none"> Check for crack, leakage, damage in the fuel tank cap. 	Replace if necessary
	<ul style="list-style-type: none"> Check for crack, damage in the gasket. 	Replace if necessary
	<ul style="list-style-type: none"> Check for leakage at full close. 	Replace if necessary
Engine Oil	<ul style="list-style-type: none"> Check the oil level. 	Fill oil
Electrical Equipment	<ul style="list-style-type: none"> Check that the main switch functions normally. 	Replace if necessary
	<ul style="list-style-type: none"> Check that the battery electrolyte level and specific gravity are normal. 	Replenish or recharge
	<ul style="list-style-type: none"> Check for loose connections on the battery terminal. 	Retighten
	<ul style="list-style-type: none"> Check that the stop switch functions normally and make sure the stop switch lock is secured. 	Remedy or replace if necessary
	<ul style="list-style-type: none"> Check cords for loose connections and damage. 	Correct or replace if necessary
	<ul style="list-style-type: none"> Check the spark plugs for dirt, wear and carbon build-up. 	Clean or replace if necessary
	<ul style="list-style-type: none"> Check the warning buzzer (one beep) and warning LED lamp (ON for 1 sec) when key is ON. 	Repair

Item	Points to Check	Remedy
Clutch and Propeller System	• Check that clutch engages correctly when operating the shift lever.	Adjust
	• Visually check propeller for bent or damaged blades.	Replace if necessary
	• Check the propeller nut is tightened and the split pin is in the correct position.	Tighten or replace
Installation of Motor	• Check all the bolts attaching the motor to the boat.	Tighten
	• Check the thrust rod installation.	Replace if necessary
Power Trim & Tilt	• Check working of the tilt up and down of the motor.	Repair
Coolant	• Check that the coolant level is full to the middle of the lower sight glass.	Refill/Replace
Tools and Spares	• Check that there are tools and spare parts for replacing spark plugs, the propeller, etc.	Order
	• Check that you have the spare rope and stop switch lock.	
Steering Devices	• Check the operation of the steering handle and remote control (if installed) are functioning normally.	Repair
Other parts	• Check if the anodes are securely installed.	Tighten if necessary
	• Check the anode for corrosion and deformation.	Replace

9.4. Periodic Inspection

It is important to inspect and maintain your outboard motor regularly. Make sure to perform each service at interval specified in the chart below. Maintenance intervals are determined by the number of hours outboard motor has been used or number of months, whichever comes first. Your outboard motor should receive careful and complete inspection at 300 hours. This is the best time for major maintenance procedures to be carried out with your Freedom Outboard dealer.

Record inspection and work performed on your maintenance log.

Description		Inspection intervals				Maintenance Procedure
		First 20 hours or 1 month	Every 50 hours or 3 month	Every 100 hours or 6 month	Every 200 hours or 1 year	
Fuel System	Fuel filter	■	■			See <i>Engine Fuel Filter - Replace</i> pg. 10-14.
	Fuel filter (Vapor separator)				■	Check and clean. Replace as necessary.
	Piping/Hoses	■	■			Check and clean. Replace as necessary.
	Fuel tank	■	■			See <i>External Fuel Tank - Replace Filter & Clean</i> pg. 10-17.
	Fuel tank cap	■	■			
	Fuel pump	■	■			Check and clean. Replace if necessary. Recommended service by Freedom Outboard authorized dealer.
Ignition	Spark plug	■		■		See <i>Spark Plug Inspection & Replacement</i> pg. 10-28.
	Ignition timing	■		■		Check timing. Recommended service by Freedom Outboard authorized dealer.
Starting System	Starter motor			■		Check for salt deposits and the battery cable connection. Recommended service by Freedom Outboard authorized dealer.
	Battery	■	■			See <i>Battery - Check/Replace/Charge</i> pg. 10-3.
Engine	Engine oil	Replace ■		Replace ■		Replace. See <i>Engine Oil & Oil Filter - Replace</i> pg. 10-6.
	Oil filter	Replace ■			Replace ■	
	Valve Clearance	■		■		Check & adjust. Recommended service by Freedom Outboard authorized dealer.
	Timing belt			■		Check and replace as necessary. Recommended service by Freedom Outboard authorized dealer.
	Thermostat			■		Check and replace as necessary. Recommended service by Freedom Outboard authorized dealer.
Lower Unit	Propeller	■	■			Check for bent blades, damage, wear. Replace as necessary. See <i>Propeller Install</i> pg. 4-8.
	Gear oil	Replace ■	■	Replace ■		Change or replenish oil and check for leaks. See <i>Gear Oil - Check & Replace</i> pg. 10-22.

Description	Inspection intervals				Maintenance Procedure
	First 20 hours of 1 month	Every 50 hours of 3 month	Every 100 hours of 6 month	Every 200 hours of 1 year	
Power trim & tilt	■		■		Check & replenish oil, manually operate. See <i>Power Trim & Tilt Fluid - Check & Add</i> pg. 10-24.
Warning system		■			Check function. Recommended service by Freedom Outboard authorized dealer.
Bolts and Nuts	■	■			Retighten.
Sliding and Rotating Parts, Grease Nipples	■	■			Apply and pump in grease. See <i>Grease Points</i> pg. 10-34.
Outer Equipment	■	■			Check for corrosion.
Coolant System	■	■			Check Coolant level. Replenish if necessary. See <i>Coolant - Check & Add</i> pg. 10-18.
Anode			■		See <i>Anode Inspection</i> pg. 10-30 and <i>Ground Wire Inspection</i> pg. 10-33.

Outboard motors used in rental, commercial, or other under severe conditions as described below require more frequent inspections and maintenance than shown in this manual.

- Continuous operation at maximum engine speed
- Continuous operation at idling or trolling speed
- Operation without appropriate warm up
- Stopping without sufficient time for the engine to cool down
- Frequent sudden acceleration and sudden deceleration
- Frequent stop and start operation
- Frequent shifting operation
- Frequent operation in acidic, polluted, muddy, sandy, or shallow water

Appropriate maintenance can prolong your engine life. Consult your Freedom Outboard authorized dealer at suitable maintenance intervals depending on operating and environmental conditions.

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10. Maintenance

Your personal safety and that of your passengers depends on how well you maintain your outboard motor. Proper care and safe operation of this outboard motor is required for optimal performance and use of your outboard motor.

As the owner, it is highly recommended that you become familiar with correct inspection and maintenance procedures and timelines, safety checks and storage requirements outlined in this manual. Carefully follow the maintenance procedures and inspection at the recommended intervals. See *Inspection Schedules* pg. 9-1 for inspection and maintenance intervals. See *Off-season Storage* pg. 8-1 for storage requirements.

Normal Use

The maintenance intervals apply to an outboard motor in normal use. If you use your outboard motor under severe conditions such as frequent full-throttle operation, frequent operation in brackish water, or for commercial use, maintenance should be performed at shorter intervals. If in doubt, consult your dealer for advice.

Replacement Parts and Service

Use a Freedom Outboard Authorized Service shop for service, maintenance, repairs and warranty work on this outboard motor.

We strongly recommend that you use only genuine replacement parts on your outboard motor. Damage to your outboard motor arising from the use of other than genuine parts is not covered under the warranty.

See the *Specifications* section, starting on pg. 3-1 for service replacement requirements, part names and other specifications.

See www.Freedom-Outboard.com for warranty information.

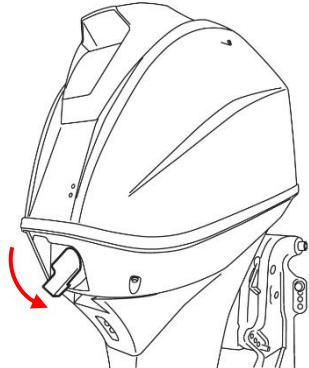
Secure the Motor

Before starting any maintenance procedure, the outboard motor must be secured to the transom (see *Mounting the Outboard Motor* pg. 4-1 or *Mounting the Motor with a Breakaway Jack Plate* pg. 4-3) or a service stand (see *Removing and Moving the Motor* pg. 7-2).

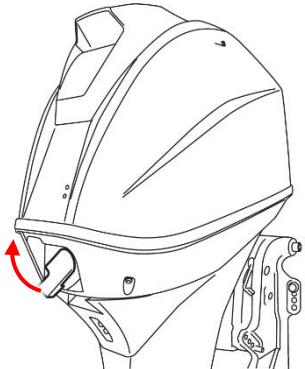
10.1. Cleaning the Outboard Motor

Outboard Engines used in salt water, brackish water or water with a high acidic level may corrode more quickly. See Periodic Inspection pg. 9-4 for normal washing intervals. It is recommended to check the chemical properties of the water in which your outboard motor is regularly used and adjust the frequency of cleaning and inspecting your motor accordingly. See also *External Fuel Tank - Replace Filter & Clean* pg. 10-17.

1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.
⚠️ WARNING: You may be injured from high engine temperatures if you attempt maintenance directly after operation.
2. Disconnect the battery cable from the battery negative (-) terminal. See *Battery Disconnect* pg. 6-3.
3. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.



4. Use a dry cloth to remove fuel remaining in the cowl and dispose of it in accordance with local fire prevention and environment protection regulations.
5. Use a dry cloth to completely wipe off water and salt from the electrical components.
6. Replace the top cowl, raise the Cowl Hook Lever and secure. Lower the Cowl Hook Lever to unlock the top cowl.



7. Use fresh water to remove salt, chemicals or mud from the outside of the motor. Be careful not to spray water inside of the top cowl, especially electrical components.
8. Record outer equipment washing and inspection for corrosion on your maintenance log.

10.2. Battery - Check/Replace/Charge

The Battery requires inspection and possible replacement at hourly or time intervals. See Periodic Inspection pg. 9-4 for normal inspection intervals.

Batteries are purchased separately. Specifications and features of batteries vary among the manufacturers. See *Service Replacement Specifications* pg.3-17 for battery requirements.

See *Off-season Storage* pg. 8-1 for considerations on battery storage when not using the engine frequently.

⚠️ WARNING: Before handling any battery, review *Battery Hazards* pg. 2-4 for safety precautions and refer to the battery manufacturer's recommendations, procedures and safety information.

1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.

⚠️ WARNING: You may be injured from high engine temperatures if you attempt maintenance directly after operation.
2. Disconnect the battery. See *Battery Disconnect* pg. 6-3.
3. Remove the battery to a well-ventilated spot.
4. Check the electrolyte level and measure the voltage and specific gravity of the battery.

Notes:

- Specifications and features of batteries vary among the manufacturers. Refer to the battery manufacturer's guidelines and procedures.
- Always use a fully charged battery and replace batteries that do not fully charge. See *Service Replacement Specifications* pg.3-17 for battery requirements.
- A battery with low voltage may affect Trolling Speed Controls. See *Trolling Speed Control* pg. 6-21.

Specific Gravity at 20°	Terminal Voltage (V)	Charge Condition
1.120	10.5	Fully discharged
1.160	11.1	1/4 charged
1.210	11.7	1/2 charged
1.250	12	3/4 charged
1.280	13.2	Fully charged

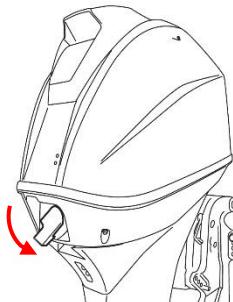
5. Apply grease to battery terminals.
6. Record any battery changes or replacement information on your maintenance log.

10.3. Engine Oil - Check & Add

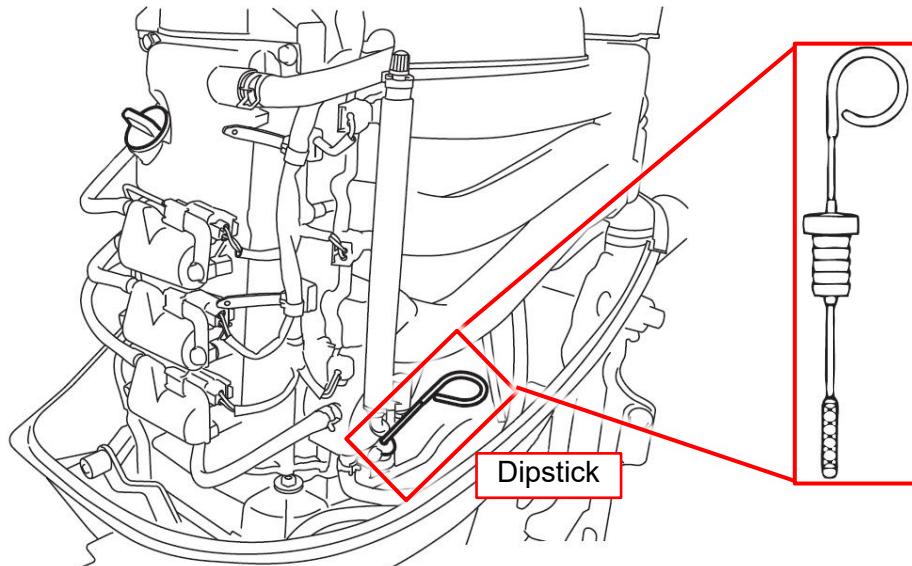
Check the engine oil level daily before each use (see *Daily Inspection* pg. 9-2) or after activation of an low oil warning light (see *Warning System Indicators & Faults* pg. 12-4).

IMPORTANT: DO NOT run the engine if the oil low warning light is activated or if a leak is found, or engine may be severely damaged.

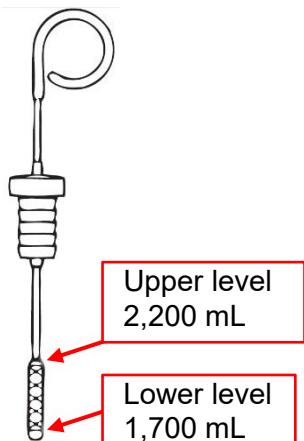
1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.
- ⚠ WARNING:** You may be injured from high engine temperatures if you attempt maintenance directly after operation.
2. Leave the engine in a vertical position for over 5 minutes to allow oil to settle.
3. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.



4. Remove the dipstick.



5. Wipe oil off the dipstick with a clean cloth.
6. Insert the dipstick into the hole completely.
7. Remove the dipstick again.
8. Check the oil level on the dipstick. The oil level must be between upper limit and lower limit shown on the dipstick.



IMPORTANT: If the oil level is low, or too high, the life expectancy of the engine will be shortened significantly.

9. Check the oil quality on the dipstick. Some oil dilution is normal if engine is idled or trolled for long periods, especially in cooler water temperatures. See *Engine Oil & Oil Filter* pg. 10-6 if:

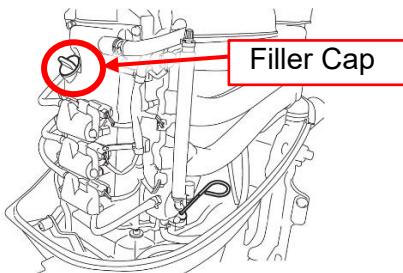
- the engine oil is milky color or appears contaminated.
- the engine oil is contaminated with fuel or is emitting strong fuel smell.

10. Replace the dipstick.

11. If engine oil levels are correct, go to Step 16. Otherwise:

- If more oil is required, inspect engine for oil leaks. Correct any problems or contact your Freedom Outboard dealer for service. Go to Step 12 to add oil.
- IMPORTANT:** DO NOT run the engine if oil is low or if a leak is found, or engine may be severely damaged.
- If oil needs to be removed, refer to See *Engine Oil & Oil Filter* pg. 10-6 to drain engine oil then return to step 16 in this procedure.

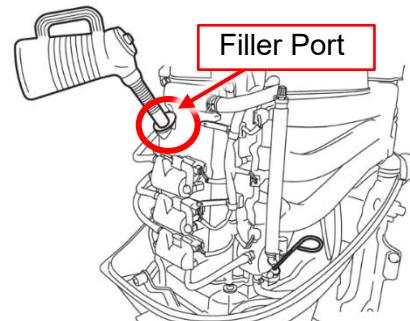
12. Remove the oil filler cap.



13. Select the Engine Oil and quantity. See *Service Replacement Specifications* pg. 3-17 for Engine Oil specifications.

IMPORTANT:

- Use of engine oils that do not meet these requirements will result in reduced engine life, and other engine problems.
- Never use Synthetic Oil. Use of Synthetic Oil will cause catastrophic engine failure!



14. Add engine oil through the filler port (total capacity is specified in *Service Replacement Specifications* pg. 3-17.)

CAUTION: Wipe off oil immediately if spilled.

15. Replace and tighten the oil filler cap.

16. Wait 5 minutes then repeat steps to check oil levels.

17. Start the engine and idle for 5 minutes. Check that no oil leaks and no warning indicator lights activate. See *Warning System Indicators & Faults* pg. 12-4. If the engine oil replacement indicator was activated, the replacement indicator function must be reset. See *Engine Oil Indicator Reset* pg. 10-11.

18. Check Engine Oil procedure is complete.

19. Record any oil addition information on your maintenance log.

10.4. Engine Oil & Oil Filter - Replace

The Engine Oil and Filter may require replacement for the following reasons:

- At hourly or time intervals. See Periodic Inspection pg. 9-4 for normal replacement intervals.
- As part of off-season storage.
- If an oil leak is found.

IMPORTANT: DO NOT run the engine if the oil low warning light is activated or if a leak is found, or engine may be severely damaged.

- If Engine Oil is contaminated. See *Engine Oil* pg. 10-4.

1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.

⚠ WARNING: You may be injured from high engine temperatures if you attempt maintenance directly after operation.

2. Disconnect the external fuel tank from the engine. See *Disconnect External Fuel Tank* pg. 6-6.

⚠ DANGER ⚠

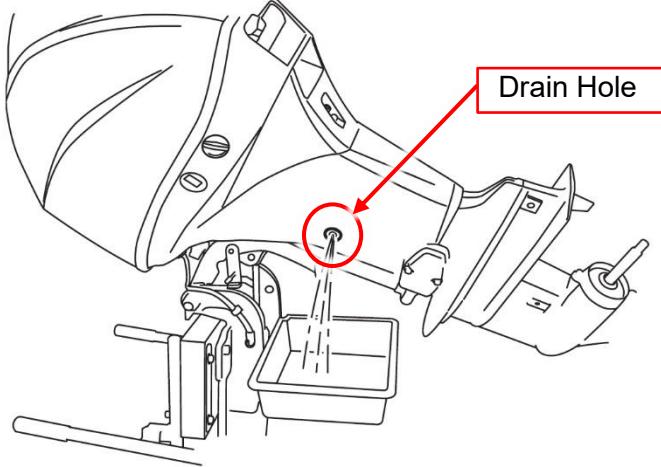
When tilting the outboard motor fully up for more than a few minutes, disconnect the fuel hose first or fuel may leak, potentially catching fire.

3. Leave the engine in a vertical position for over 5 minutes to allow oil to settle.
4. Tilt up the outboard motor and lock the tilt with the tilt stopper.
See *Tilt Up & Lock* pg. 6-30.

⚠ DANGER ⚠

Do not go under the outboard motor tilted up and locked, or accidental fall of outboard motor could lead to severe personal injury

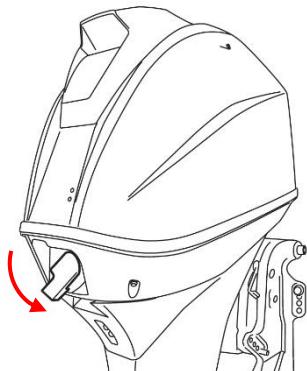
5. Turn the steering on the outboard motor so that the drain bolt is facing downward.
6. Put an oil drain pan under the oil drain hole.
7. Remove the oil drain bolt and completely drain oil from the engine.



8. Replace the old bolt temporarily, release the tilt stopper and lower the engine to a vertical position (see *Unlock & Tilt Down* pg. 6-31.)
9. Repeat steps 2-7, two or three times to drain the oil completely.
10. Remove the old bolt.
11. Apply oil on the sealing surface of the drain bolt.
12. Install a new gasket and tighten the drain bolt assembly.

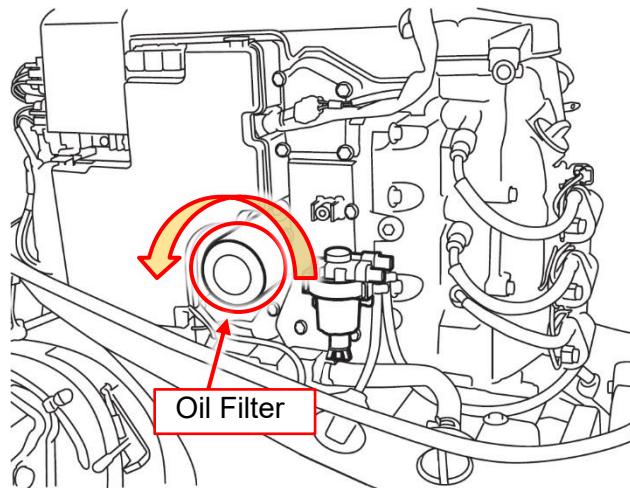
Drain Bolt Specified Torque: 24Nm (17 ft-lb, 2.4 kgf-m)

13. Release tilt stopper from the machined groove and tilt the outboard motor down. See *Unlock & Tilt Down* pg. 6-31.
14. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.



15. Replace the oil filter if the periodic maintenance time is met or if contaminated oil is found. If oil filter is not being replaced at this time, go to Step 21. Otherwise, continue with step 16 to change the oil filter.
16. Place a rag or towel below the oil filter to absorb any spilled oil.

17. Use a Tohatsu Engine Oil wrench to unscrew the old filter by turning the filter counterclockwise.



Oil Filter Wrench
Tohatsu P/N
3AC-99090-0
3AC99090M
US & Canada only

18. Clean the mounting base.

19. Apply film of clean oil to O-ring.

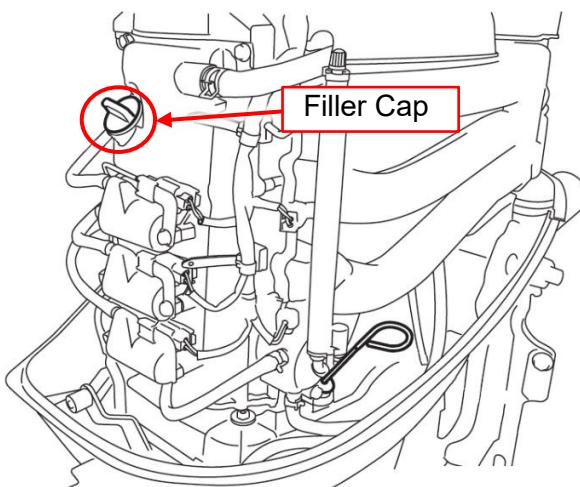
IMPORTANT: Do not use grease.

20. Install oil filter and use the oil filter wrench on a torque wrench to tighten.

Oil Filter Specified Torque: 18 Nm (13 ft-lb, 1.8 kgf-m).

NOTE: If a torque wrench is not available when you are fitting an oil filter, a good estimate of the correct torque is $\frac{3}{4}$ to 1 turn past finger tight. Have the oil filter adjusted to the correct torque as soon as possible with a torque wrench.

21. Remove the oil filler cap.



22. Select the Engine Oil and quantity. See *Service Replacement Specifications* pg. 3-17 for Engine Oil specifications.

IMPORTANT:

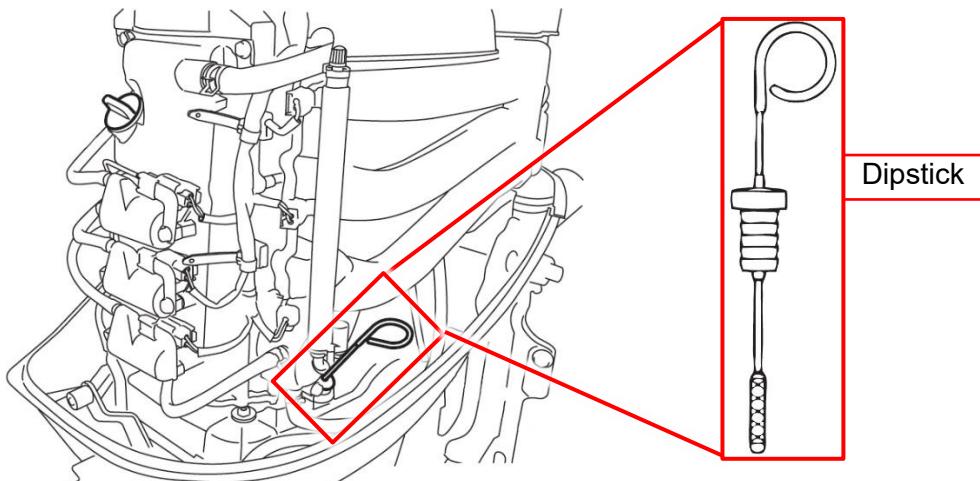
- Use of engine oils that do not meet these requirements will result in reduced engine life, and other engine problems.
- Never use Synthetic Oil. Use of Synthetic Oil will cause catastrophic engine failure!

23. Fill the engine oil through the filler port. Capacity is specified in *Service Replacement Specifications* pg. 3-17.

CAUTION: Wipe off oil immediately if spilled.

24. Replace and tighten the oil filler cap.

25. Wait 5 minutes to allow oil to settle then remove the dipstick.



26. Wipe oil off the dipstick with a clean cloth.

27. Insert the dipstick into the hold completely.

28. Remove the dipstick again.

29. Check the oil level on the dipstick. The oil level must be between the upper limit and lower limit shown on the dipstick.

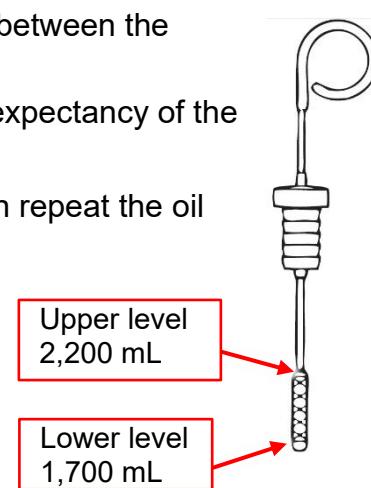
IMPORTANT: If the oil level is low, or too high, the life expectancy of the engine will be shortened significantly.

- If more oil is required, add more engine oil and then repeat the oil level checks.

IMPORTANT: DO NOT overfill engine oil, or engine oil could leak and/or engine could be damaged.

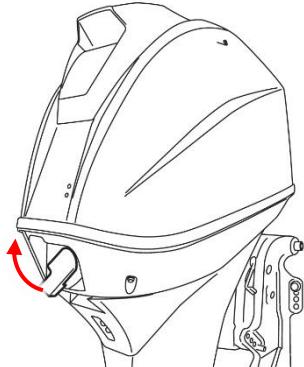
- If oil needs to be removed, refer to the first part of this procedure to drain engine oil, then repeat the engine oil level checks.

30. Replace the dipstick.



Maintenance

31. Replace the top cowl, raise the Cowl Hook Lever and secure.



32. Disconnect the stop switch lock and crank the main switch key approximately 10 times to prime the oil pump.

33. Wait 5 minutes then repeat steps to check oil. Add or drain oil as necessary.

34. Start the engine and idle for 5 minutes. See *Starting the Engine* pg. 6-8.

35. Check that no oil leaks and no warning indicator lights activate. See *Warning System Indicators & Faults* pg. 12-4. If the engine oil replacement indicator was activated, the replacement indicator function must be reset. See *Engine Oil Indicator Reset* pg. 10-11.

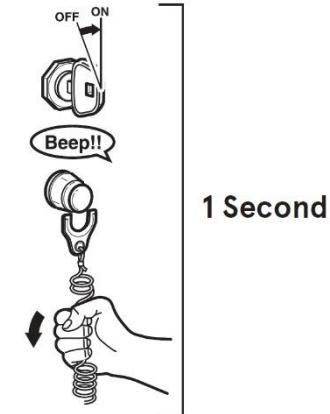
36. The Change Engine Oil & Oil Filter procedure is complete.

37. Record oil and/or filter change information on your maintenance log.

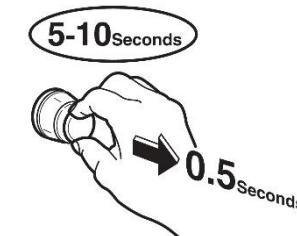
10.5. Engine Oil Indicator Reset

The Engine oil replacement indicator flashes after 100 hours of operation to alert the need for engine oil replacement. See *Engine Oil & Oil Filter* pg. 10-6.

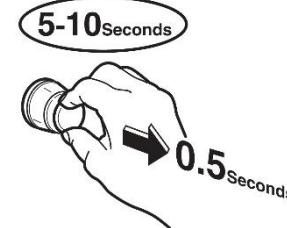
1. Be certain the safety lanyard is installed. Turn the key to the on position and after the beep pull the safety lanyard off.



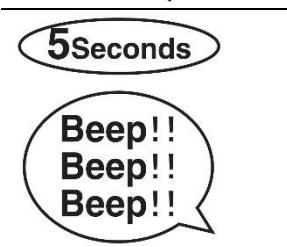
2. Within 5-10 seconds, pull the red knob on the safety switch out and release.



3. Wait 5-10 seconds and again, pull the red knob out and release.



4. Within 5-10 seconds you will hear 3 beeps to inform you that you have successfully reset the system.



5. Turn the key to the off position and replace the safety lanyard lock.

The engine oil replacement indicator's function operates again after 100 hours of operation from the reset this function.

10.6. Fuel System Draining

Use this procedure to drain gas from the engine:

- To inspect for suspected fuel contamination or if stale fuel is present.
- As part of off-season or infrequent use storage. See *Off-season Storage* pg. 8-1.

⚠ DANGER ⚠

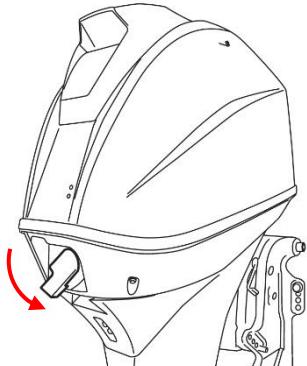
Review Gasoline and Engine Exhaust Safety
pg. 2-2 for gasoline hazards.

1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.
⚠ WARNING: You may be injured from high engine temperatures if you attempt maintenance directly after operation.
2. Disconnect the external fuel tank from the engine. See *Disconnect External Fuel Tank* pg. 6-6.

⚠ DANGER ⚠

When tilting the outboard motor fully up for more than a few minutes, disconnect the fuel hose first or fuel may leak, potentially catching fire.

3. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.



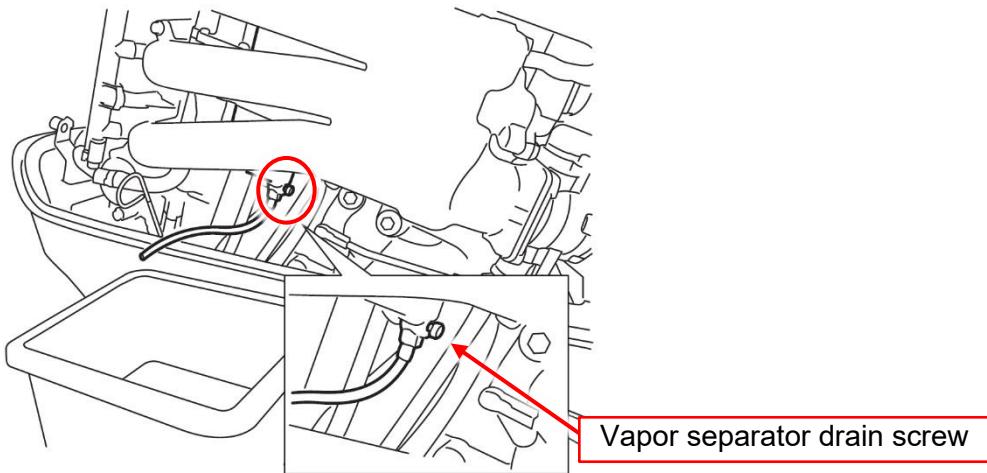
4. Pull the drain tube outside the bottom cowl. Place an approved fuel container under the drain tube end and use a funnel to avoid spilling fuel.

5. Tilt up the outboard motor (lock if fully tilted up) See *Tilt Up & Lock* pg. 6-30.

⚠ DANGER ⚠

Do not go under the outboard motor tilted up and locked, or accidental fall of outboard motor could lead to severe personal injury

6. Loosen the vapor separator drain screw until fuel flows out of the drain tube.



7. Leave the outboard motor in this position until all fuel has been drained.
8. When thoroughly drained, retighten the drain screw securely.
9. Return the drain tube inside the bottom cowl.
10. Tilt the motor down until in a vertical position. See *Unlock & Tilt Down* pg. 6-31.

⚠ WARNING: Use a dry cloth to remove fuel remaining in the cowl and dispose of it in accordance with local fire prevention and environment protection regulations.

11. Check the drained fuel for the presence of water or other contaminants. If fuel is clean, go to Step 12. If either water or other contaminates are present, then:
 - a) Re-attach the external fuel tank to the engine. See *Connect External Fuel Tank* pg. 6-4.
 - b) Pressurize the fuel to refill the vapor separator. See *Pressurize External Fuel Tank* pg. 6-5.
 - c) Repeat steps 2-11 to drain and check the fuel until no water or other contaminants are present in the drained fuel.
12. The Fuel System Draining procedure is complete. See *Fill Fuel* pg. 5-2 for fuel filling procedures and fuel specifications.

10.7. Engine Fuel Filter - Replace

The Engine Fuel filter requires inspection and possible replacement at hourly or time intervals. See Periodic Inspection pg. 9-4 for normal inspection intervals.

DANGER

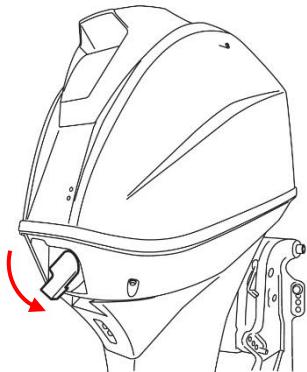
**Review *Gasoline and Engine Exhaust Safety*
pg. 2-2 for gasoline hazards.**

1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.
⚠ WARNING: You may be injured from high engine temperatures if you attempt maintenance directly after operation.
2. Disconnect the external fuel tank from the engine. See *Disconnect External Fuel Tank* pg. 6-6.

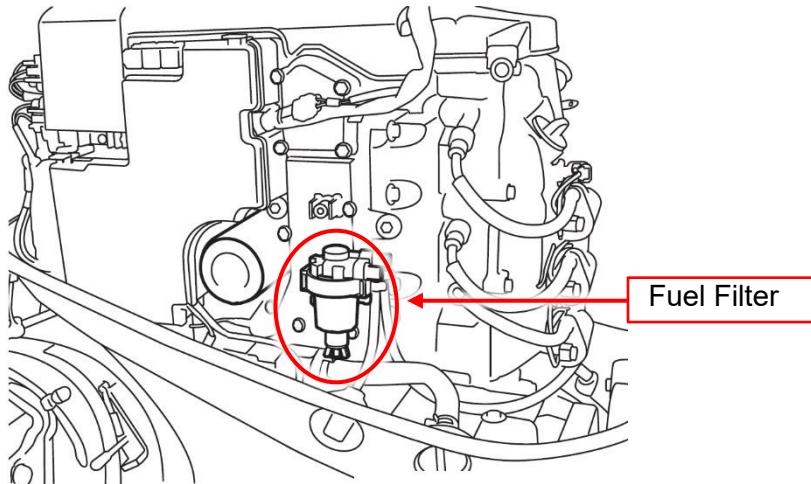
DANGER

When tilting the outboard motor fully up for more than a few minutes, disconnect the fuel hose first or fuel may leak, potentially catching fire.

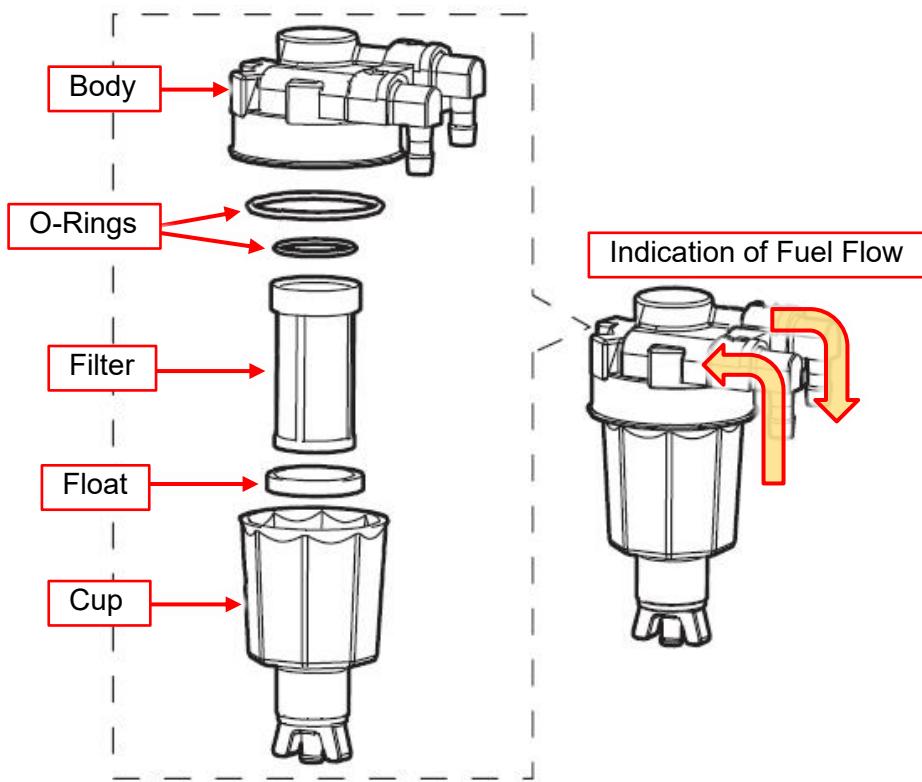
3. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.



4. Visually inspect the Fuel cup for water or debris.



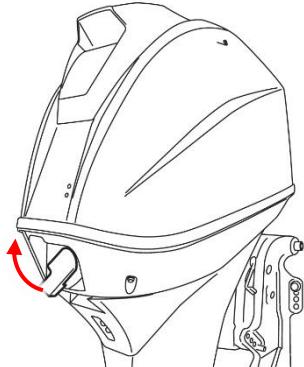
5. Remove the cup, float, filter and O-rings assembly from the fuel filter body.



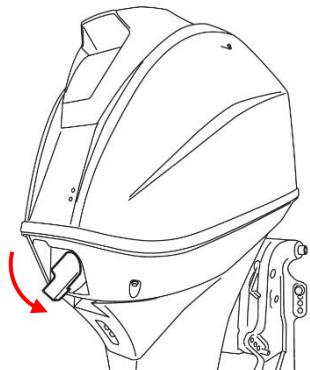
6. Check for wear and/or clogging in each part and replace as necessary.
7. Remove fuel and any water or debris from the cup, filter and hoses.
8. Reassemble fuel filter assembly and reattach to the fuel filter body.

Maintenance

9. Replace the top cowl, raise the Cowl Hook Lever and secure.



10. Reconnect the fuel connector to the engine and the fuel tank.
11. Start the engine and idle for 5 minutes.
12. Stop engine and disconnect the fuel connector from the engine and fuel tank.
13. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.



14. Check that no fuel leaks are present.
15. Change Engine Fuel Filter procedure is complete.
16. Record engine fuel filter change information on your maintenance log.

10.8. External Fuel Tank - Replace Filter & Clean

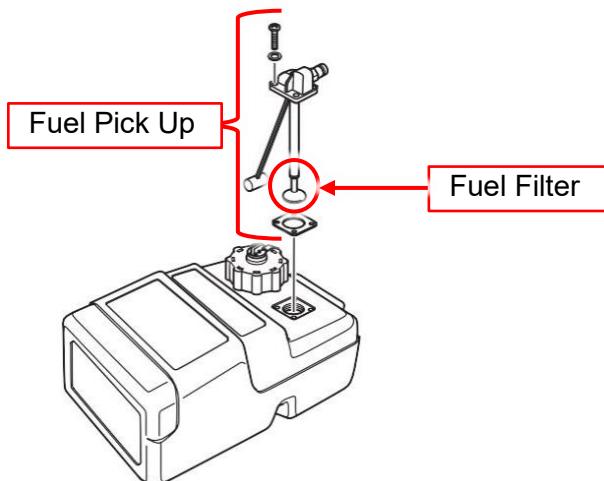
Water or dirt in the fuel tank may cause engine performance problems. Inspect and clean the tank at specified times (see *Periodic Inspection* pg. 9-4), before off-season storage (see *Off-season Storage* pg. 8-1).

Use the following general guidelines and safety considerations for changing the filter on and cleaning the external fuel tank. The external fuel tank is purchased separately. Specifications and features of fuel tanks may vary among the manufacturers. Always follow the fuel tank manufacturer's procedures and guidelines for cleaning the tank and cleaning or replacing the fuel tank filter.

DANGER

Review Gasoline and Engine Exhaust Safety
pg. 2-2 for gasoline hazards.

1. Disconnect the external fuel tank. See *Disconnect External Fuel Tank* pg. 6-6.
2. Remove fuel tank from the boat and place outdoors or in a well-ventilated area away from every source of ignition, such as sparks or open flames.
3. Follow the fuel tank manufacturer's guidelines and recommendations for external and internal cleaning. Remove and dispose of aged or contaminated gasoline in accordance with local regulations.
4. Remove the four screws to remove the Fuel Pick-Up.
5. Clean the fuel filter according the manufacturer's instructions.
6. Replace the gasket and reassemble the Fuel Pick-Up parts.



7. Record external fuel tank filter and/or cleaning information on your maintenance log.

10.9. Coolant - Check & Add

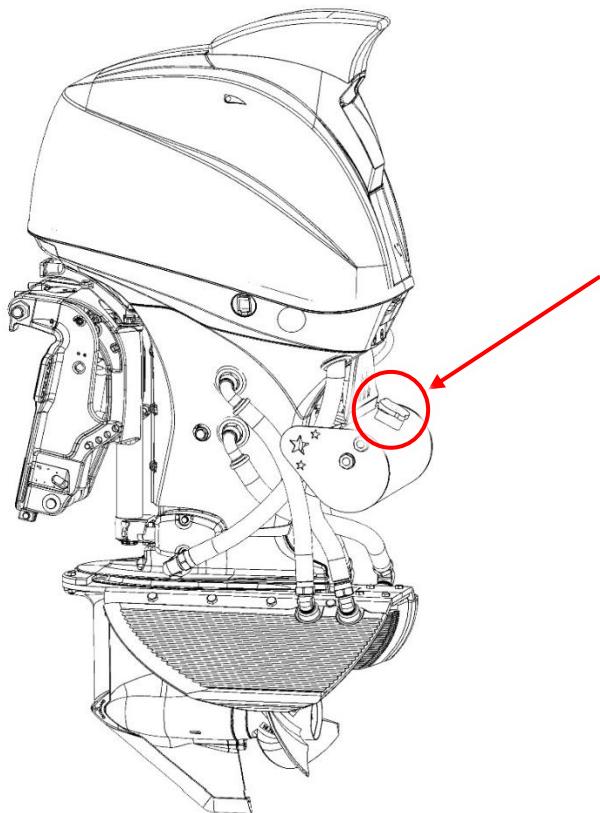
Check the coolant level as recommended before each use or after activation of a temperature warning indicator. See *Warning System Indicators & Faults* pg. 12-4 for more information on Warning lights.

IMPORTANT: Stop engine immediately if the cooling temp high warning lamp is lit or coolant leak is found, or engine could be severely damaged.

The Coolant Tank provides two sight glasses for assisting with checking Coolant Levels.

- The lower sight glass is used to assess correct Coolant levels while the engine is running as directed below and Coolant is moving through the system.
- The upper sight glass may show a level of Coolant while the engine is at rest and Coolant has drained back into the tank. Coolant levels are not expected to be visible in the upper sight glass while the engine is running. Visible Coolant levels in the upper sight glass while the engine is running is an indication that the tank is overfilled.

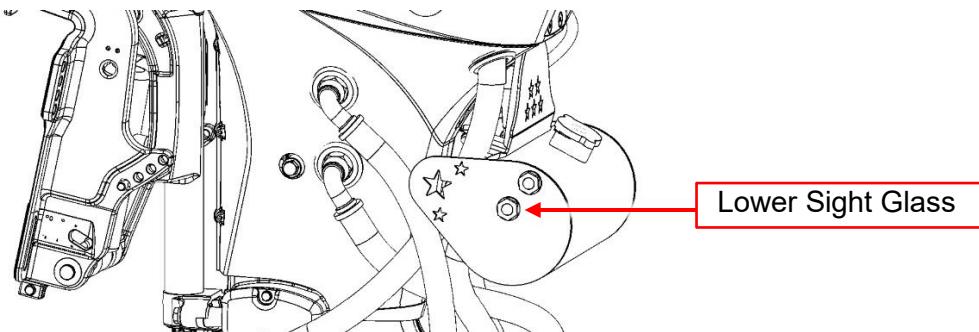
1. Place the engine in an upright and level position.
2. Remove the coolant filler cap.



3. Select the Coolant. See *Service Replacement Specifications* pg. 3-17 for Coolant specifications.

4. Fill Coolant.
 - a) Add Coolant until tank is filled to middle of the lower sight glass.
- CAUTION:** Wipe off coolant immediately if spilled.
- b) Start and run the motor at idle. While the motor is running, add Coolant until the tank fill stabilizes to the middle of the lower sight glass.
- c) Increase motor speed to $2500 \text{ min}^{-1}(\text{rpm})$ for roughly 10 seconds. While the motor is running, add Coolant until the tank fill stabilizes to the middle of the lower sight glass.

IMPORTANT: Overfilling the Coolant Tank may cause coolant to leak from the coolant filler cap during operation. If the tank is overfilled, use a syphon to remove excess coolant.

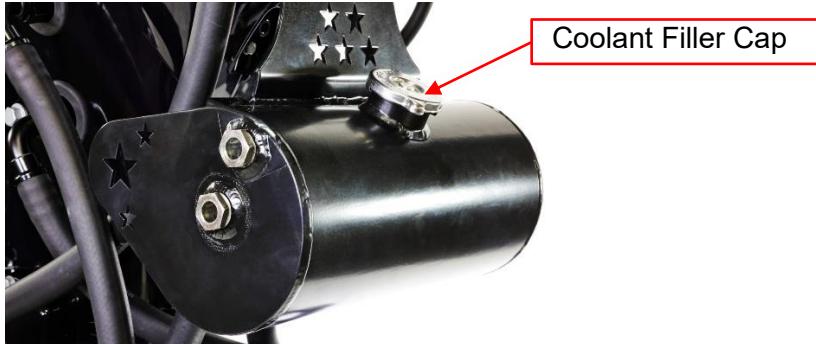


5. Stop the engine.
6. Replace and tighten the coolant filler cap.
7. Coolant is re-filled.
8. Record Coolant refill information on your maintenance log

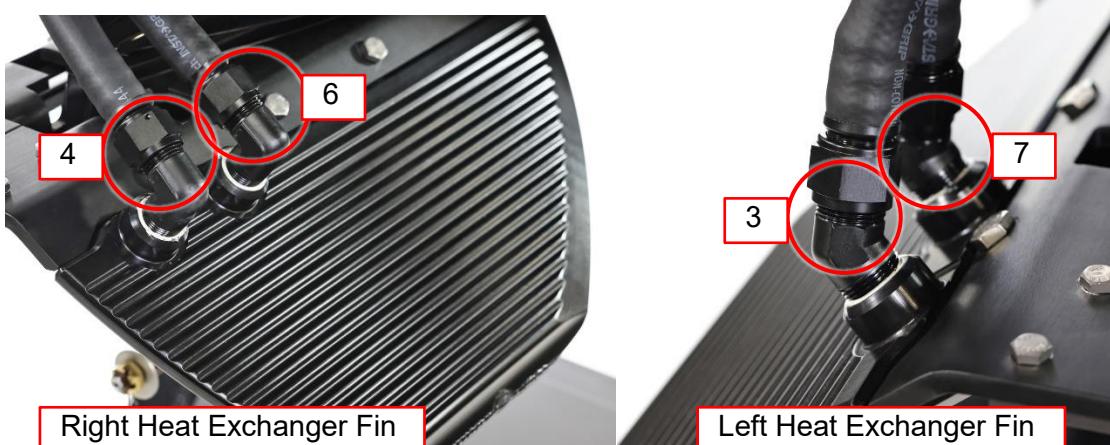
10.10. Coolant – Drain & Replace

Under normal conditions, the engine contains around 2 gallons of Coolant.

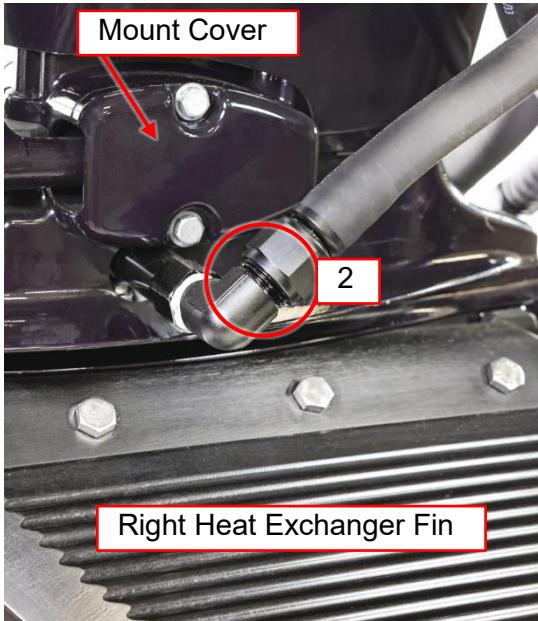
1. Place the engine in an upright and level position.
2. Place a basin under the motor.
3. Remove the coolant filler cap.



4. Use a commercially available syphon pump to remove coolant from the coolant tank into a receiving container.
5. Loosen Hoses #3, 4, 6 and 7 from the adapters on the right and left heat exchanger fins. Allow Coolant to drip into the basin.



6. Loosen and completely remove Hose #2 from the fitting below the mount cover and above the right fin. Allow coolant to drain.



7. Completely remove Hoses #3, 4, 6 and 7 from the adapters on the left and right fins. Allow any remaining coolant to drip into the basin.
8. Unbolt the 4 right fin heat exchanger bolts and remove the fin.



9. Manually tip the fin over the basin until all coolant is drained.
10. Repeat Steps 8 & 9 for the left fin.
11. Wipe coolant off engine and parts with a clean, dry rag.
12. Dispose of coolant according to local regulations and guidelines.

CAUTION: Clean up any Coolant Spills immediately.

13. Re-attach fins.
14. Replace coolant before operating motor. See *Fill Coolant* pg. 5-6.

10.11. Gear Oil - Check & Replace

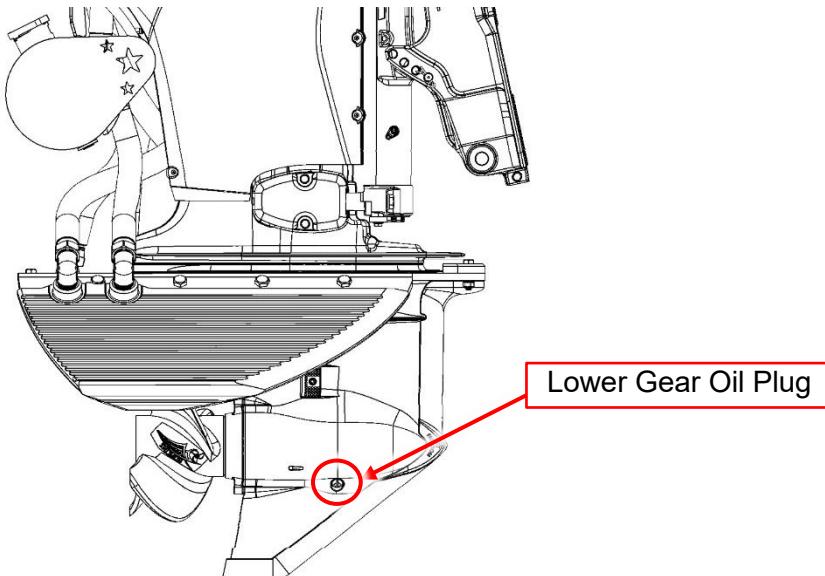
The Gear Oil requires replacement at hourly or time intervals. See Periodic Inspection pg. 9-4 for normal replacement intervals.

IMPORTANT: Frequent shifting to Forward or Reverse can accelerate wear or degradation of parts. In such case, replace gear oil earlier than the period specified.

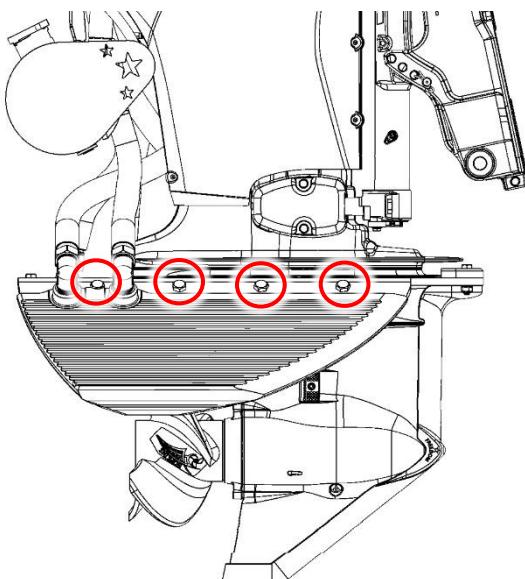
1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.

⚠ WARNING: You may be injured from high engine temperatures if you attempt maintenance directly after operation.

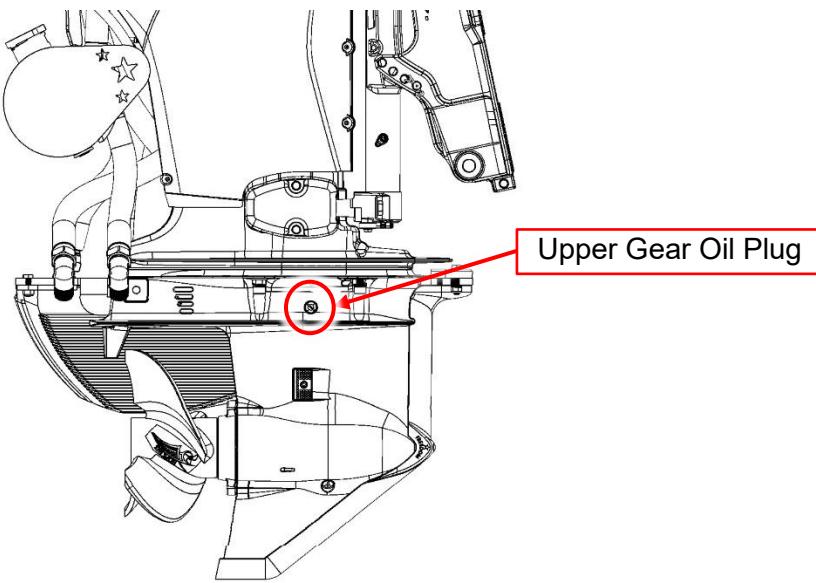
2. Leave the outboard motor in a vertical position.
3. Put a drain pan under the lower oil plug.



4. Unbolt the 4 right fin heat exchanger bolts.



5. Lift the fin to remove the upper oil plug.



6. Remove the lower oil plug to drain the gear oil:

- **For a periodic check of the Gear oil**, drain a sample amount of the oil into the pan then replace the lower plug.
- **When replacing the Gear oil completely**, allow the oil to drain completely into the pan.

7. Inspect the Gear oil. Gear oil with a milky appearance indicates a water leak. Contact your Freedom Outboard dealer.

8. Remove the lower oil plug if it was re-inserted for a sample (Step 6).

9. Insert the oil tube nozzle into the lower oil plug hole and fill with gear oil by squeezing the oil tube until oil flows out of the upper plug hole and air bubbles stop.

10. Install the upper oil plug with a new gasket and tighten.

Oil Plug Torque Specification: 4Nm (3 ft-lb, 0.4 kgf-m).

IMPORTANT: Always use a new gasket and tighten oil plug properly to prevent entry of water into lower unit.

11. Remove the oil tube nozzle.

CAUTION: Wipe off oil immediately if spilled.

12. Install the lower oil plug with a new gasket and tighten.

Oil Plug Torque Specification: 4Nm (3 ft-lb, 0.4 kgf-m).

IMPORTANT: Always use a new gasket and tighten oil plug properly to prevent entry of water into lower unit.

13. Rebolt the starboard heat exchanger fin bolts.

14. Gear Oil Check and Replacement procedure is complete.

15. Record Gear Oil check or replacement information on your maintenance log.

10.12. Power Trim & Tilt Fluid - Check & Add

The Power Trim & Tilt Fluid requires inspection at hourly or time intervals. See Periodic Inspection pg. 9-4 for normal inspection intervals.

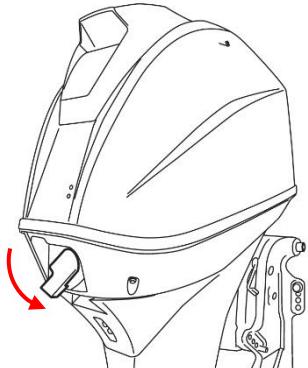
Before starting this procedure, the outboard motor must be secured to the transom or a service stand (see *Removing and Moving the Motor* pg. 7-2 for more information).

1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.
⚠ WARNING: You may be injured from high engine temperatures if you attempt maintenance directly after operation.
2. Disconnect the external fuel tank from the engine. See *Disconnect External Fuel Tank* pg. 6-6.

⚠ DANGER ⚠

When tilting the outboard motor fully up for more than a few minutes, disconnect the fuel hose first or fuel may leak, potentially catching fire.

3. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.



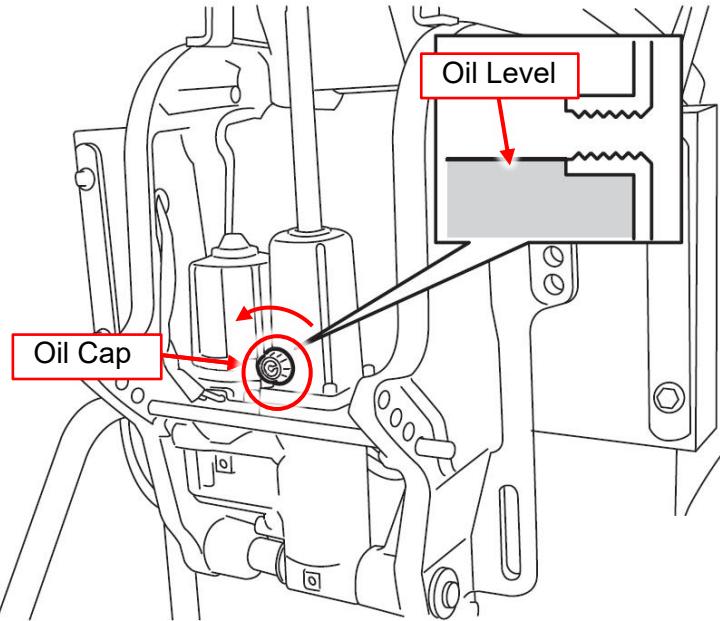
4. Tilt up the outboard motor and lock the tilt with the tilt stopper. See *Tilt Up & Lock* pg. 6-30.

⚠ DANGER ⚠

Do not go under the outboard motor tilted up and locked, or accidental fall of outboard motor could lead to severe personal injury

CAUTION: DO NOT unscrew the PTT Fluid plug without the outboard motor fully tilted up. Pressurized fluid in the PTT Fluid tank may spurt out.

5. Remove the PTT Fluid cap by turning counterclockwise.
6. Check if the fluid level reaches the bottom line of the plug hole. If not, add PTT fluid. See *Service Replacement Specifications* pg. 3-17 for PTT fluid specifications.



7. Replace the PTT Fluid cap and turn clockwise to tighten.
8. Release the tilt stopper and lower the engine to a vertical position. See *Unlock & Tilt Down* pg. 6-31.
9. Entrapped air in the Power Trim & Tilt unit will cause poor tilting movement and increased noise. Set the manual release valve to the Manual position and tilt the outboard motor up/down manually 5-6 times. When complete, reset the manual release valve to the Power position. See *Power Trim Manual Relief Valve* pg. 6-28.
10. The Check & Add Power Trim & Tilt Fluid procedure is complete.
11. Record PTT Fluid check information on your maintenance log.

10.13. Fuse Replacement

Use this procedure to replace faulty fuses.

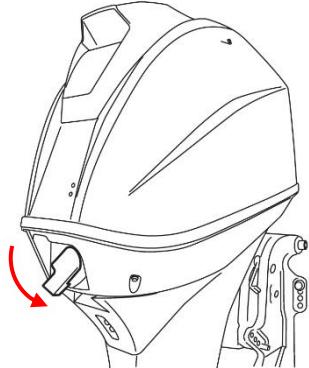
1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.

⚠️ WARNING: You may be injured from high engine temperatures if you attempt maintenance directly after operation.

2. Disconnect the battery cable from the battery negative (-) terminal. See *Battery Disconnect* pg. 6-3.

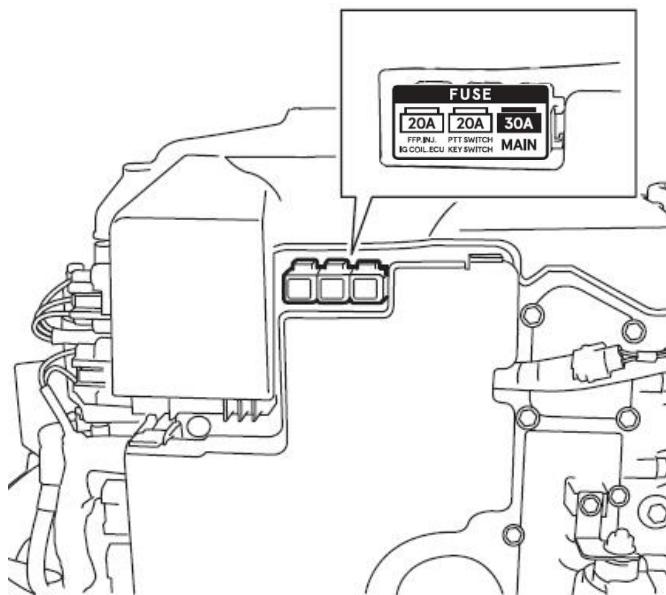
IMPORTANT: Before replacing a fuse, disconnect the battery cable from the battery negative (-) terminal. Failure to do so may cause a short circuit.

3. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.

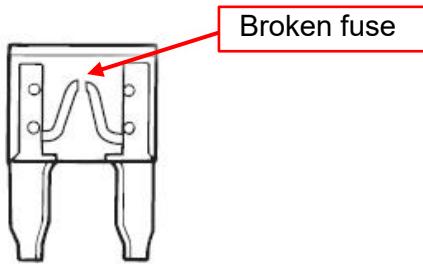


4. Press on each upper tab to release and pull off the corresponding fuse box cover.

NOTE: Spare fuse is loose inside fuse box cover.



5. Remove the fuse and check to see if the fuse is broken. If a blown fuse is detected, try to determine the cause for this and correct it. If the cause for the problem is not corrected, the fuse will likely blow again. If the fuse continues to blow, request a Freedom Outboard authorized dealer to inspect the outboard motor.



6. Replace a blown fuse with one of the same specified rating. See *Service Replacement Specifications* pg. 3-17.

IMPORTANT: Never use a fuse with a rating that exceeds the specified rating as this could cause serious damage to the electrical system.

NOTE: The outboard motor is supplied with a spare fuse in each fuse cover. If used, be sure to replace the spare fuse as soon as possible with a new spare fuse.

7. Replace the fuse box cover.
8. The Fuse Replacement procedure is complete.
9. Record any fuse replacement information on your maintenance log.

10.14. Spark Plug Inspection & Replacement

The Spark Plugs require inspection and possible replacement at hourly or time intervals. See Periodic Inspection pg. 9-4 for normal inspection intervals.

DANGER

Do not reuse spark plugs with damaged insulation, or sparks can leak through cracks, potentially leading to electric shock, explosion and/or fire.

IMPORTANT:

- Use only the recommended spark plugs. Spark plugs which have different heat ranges may cause engine damage. See *Service Replacement Specifications* pg. 3-17 for spark plug requirements.
- Do not clean electrodes of iridium spark plug. If it is contaminated with carbon deposits or dirt or is worn. Replace it with a new one.
- Do not adjust the plug gap if it is out of specification. Replace with a new one

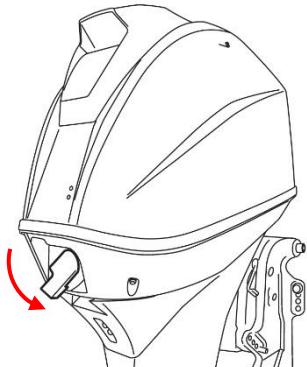
DANGER

When tilting the outboard motor fully up for more than a few minutes, disconnect the fuel hose first or fuel may leak, potentially catching fire.

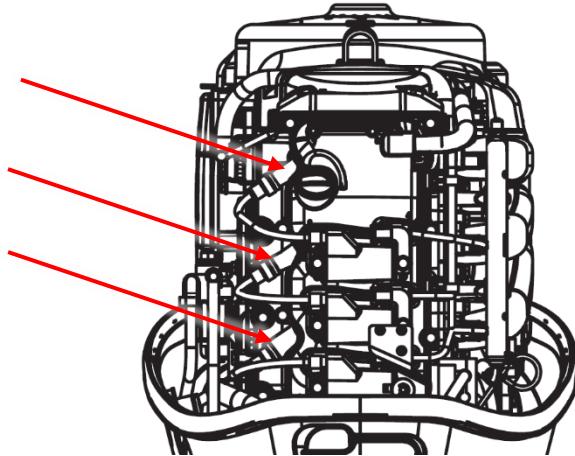
1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.

⚠ WARNING: Do not touch spark plugs immediately after stopping the engine as they will be hot and could cause severe burns if touched.

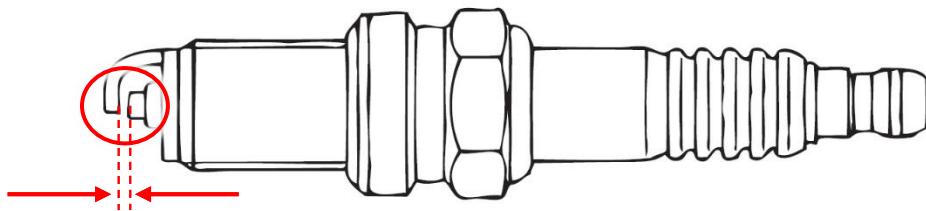
2. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.



3. Remove the spark plug caps.



4. Remove the spark plugs by turning it counterclockwise, using the 5/8 (16 mm) socket wrench and handle that is provided in accessories box. See *Accessories Box* pg. 3-2.
5. Inspect the spark plug. Replace the spark plug if:
 - the electrodes are worn or contaminated with carbon deposits or dirt
 - if the insulators are cracked or chipped
6. Measure the spark plug electrode gap with a wire type feeler gauge. The gap should be 0.7-0.8 mm (0.028-0.031 inches). If the gap is different, replace the spark plug with a new one. See *Service Replacement Specifications* pg. 3-17.



Electrode Spark Gap (0.7-0.8mm, 0.028-0.031 in)

7. Install the spark plug by hand and turn it carefully to avoid cross-threading.

8. Tighten the spark plug.

Spark Plug Specified Torque: 18.0 Nm (13.3 ft-lb, 1.84 kgf-m).

NOTE: If a torque wrench is not available when you are fitting a spark plug, a good estimate of the correct torque is $\frac{1}{4}$ to $\frac{1}{2}$ a turn past finger tight. Have the spark plug adjusted to the correct torque as soon as possible with a torque wrench.

9. The Spark Plug Replacement procedure is complete.

10. Record any Spark Plug replacement information on your maintenance log.

10.15. Anode Inspection

Sacrificial anodes protect the outboard motor from electrolytic corrosion.

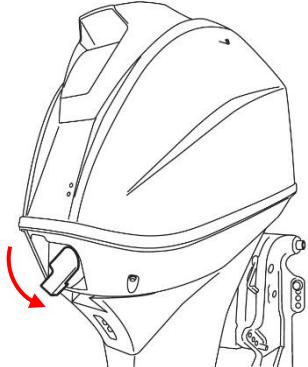
The Anodes require inspection and possible replacement at hourly or time intervals. See Periodic Inspection pg. 9-4 for normal inspection intervals.

1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.
⚠️ WARNING: You may be injured from high engine temperatures if you attempt maintenance directly after operation.
2. Disconnect the external fuel tank from the engine. See *Disconnect External Fuel Tank* pg. 6-6.

⚠️ DANGER ⚠️

When tilting the outboard motor fully up for more than a few minutes, disconnect the fuel hose first or fuel may leak, potentially catching fire.

3. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.



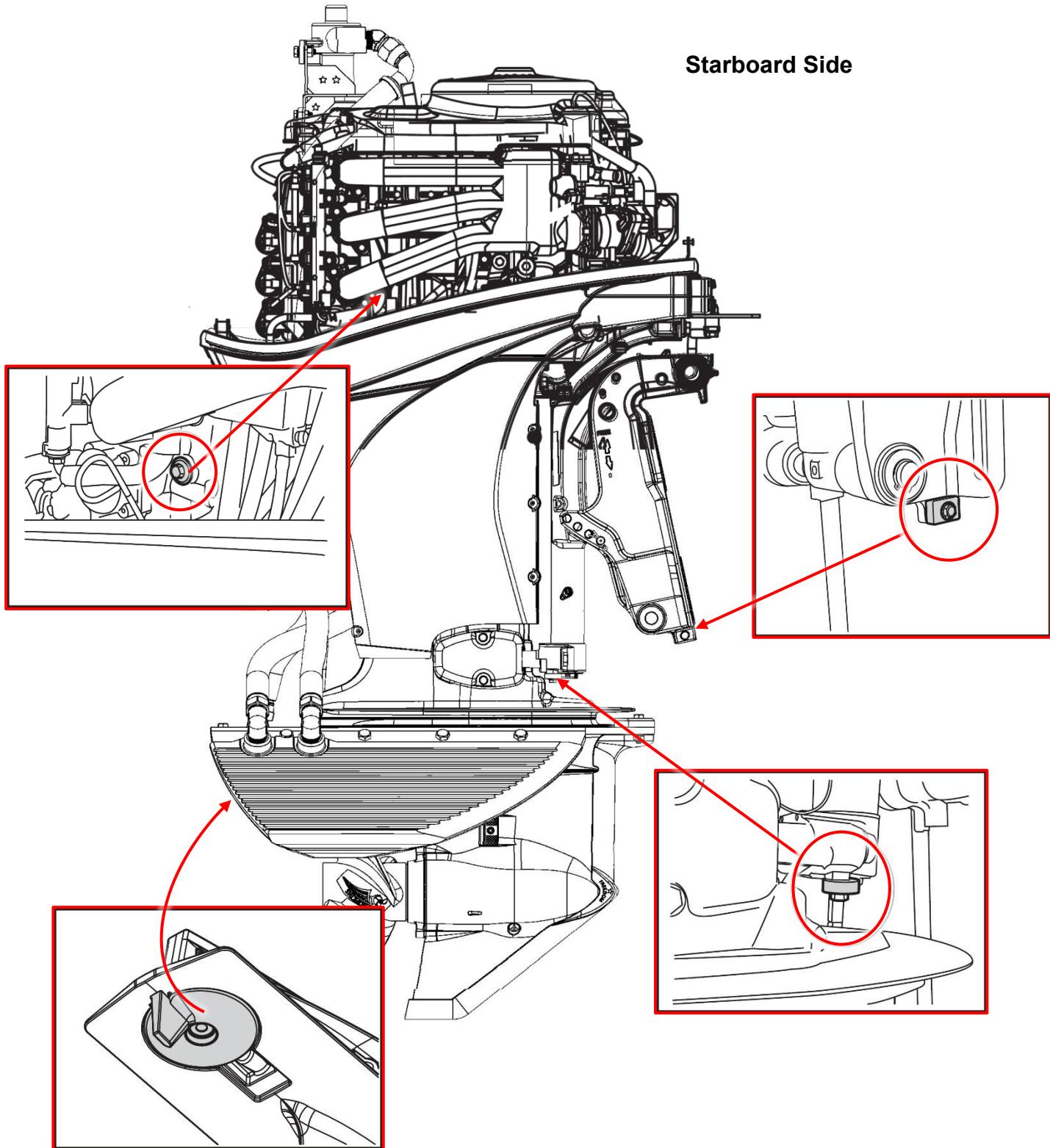
4. Tilt up the outboard motor and lock the tilt with the tilt stopper. See *Tilt Up & Lock* pg. 6-30.

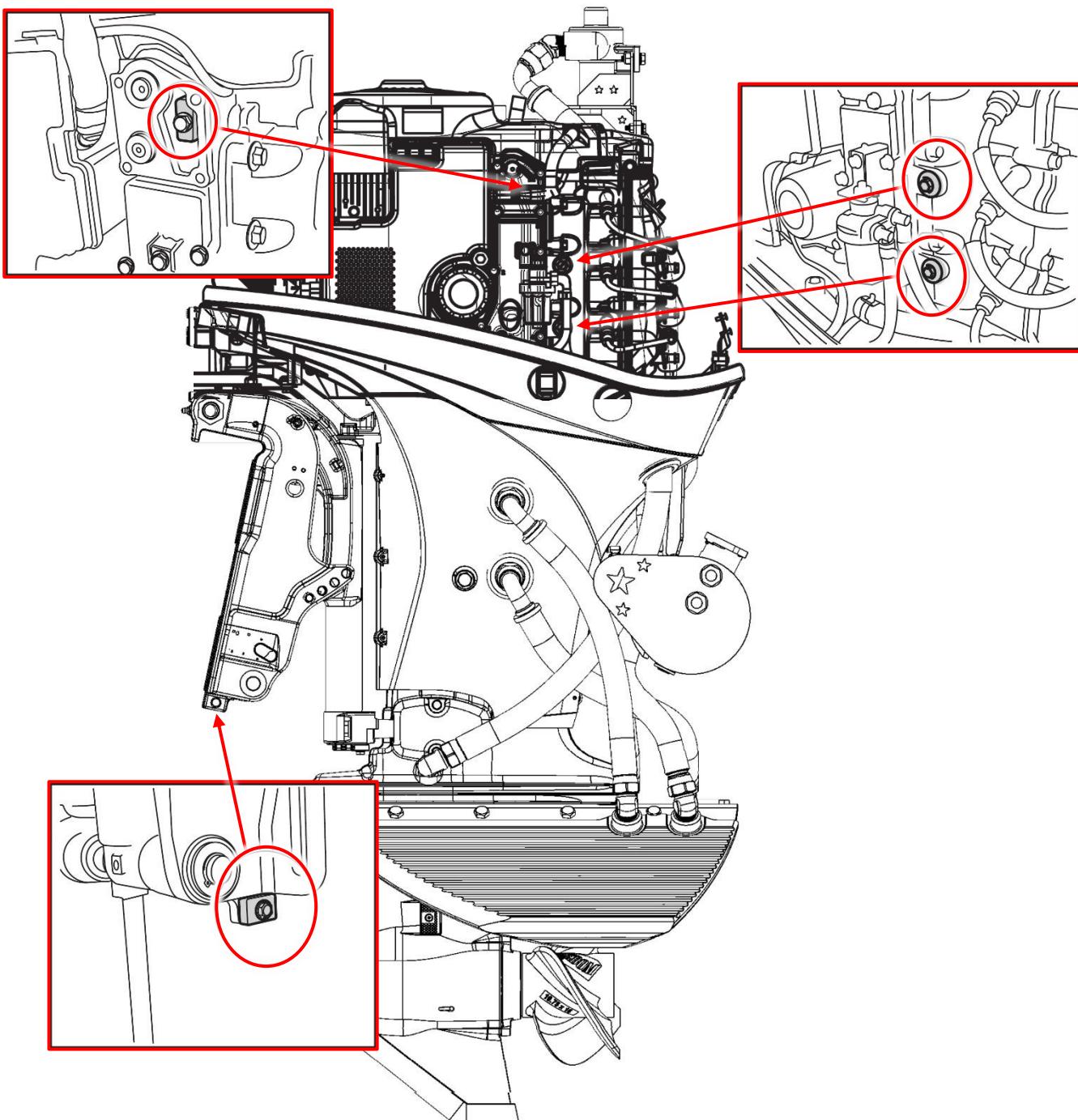
⚠️ DANGER ⚠️

Do not go under the outboard motor tilted up and locked, or accidental fall of outboard motor could lead to severe personal injury

5. Inspect each Port Side and Starboard Side anode as displayed in the diagram. If an anode is eroded more than 1/3 of original size, replace it.

6. At each inspection point, re-tighten the anode attaching bolt as it is likely to be subjected to electrolytic corrosion.
7. Record any Anode or Ground Wire inspection and replacement information on your maintenance log.



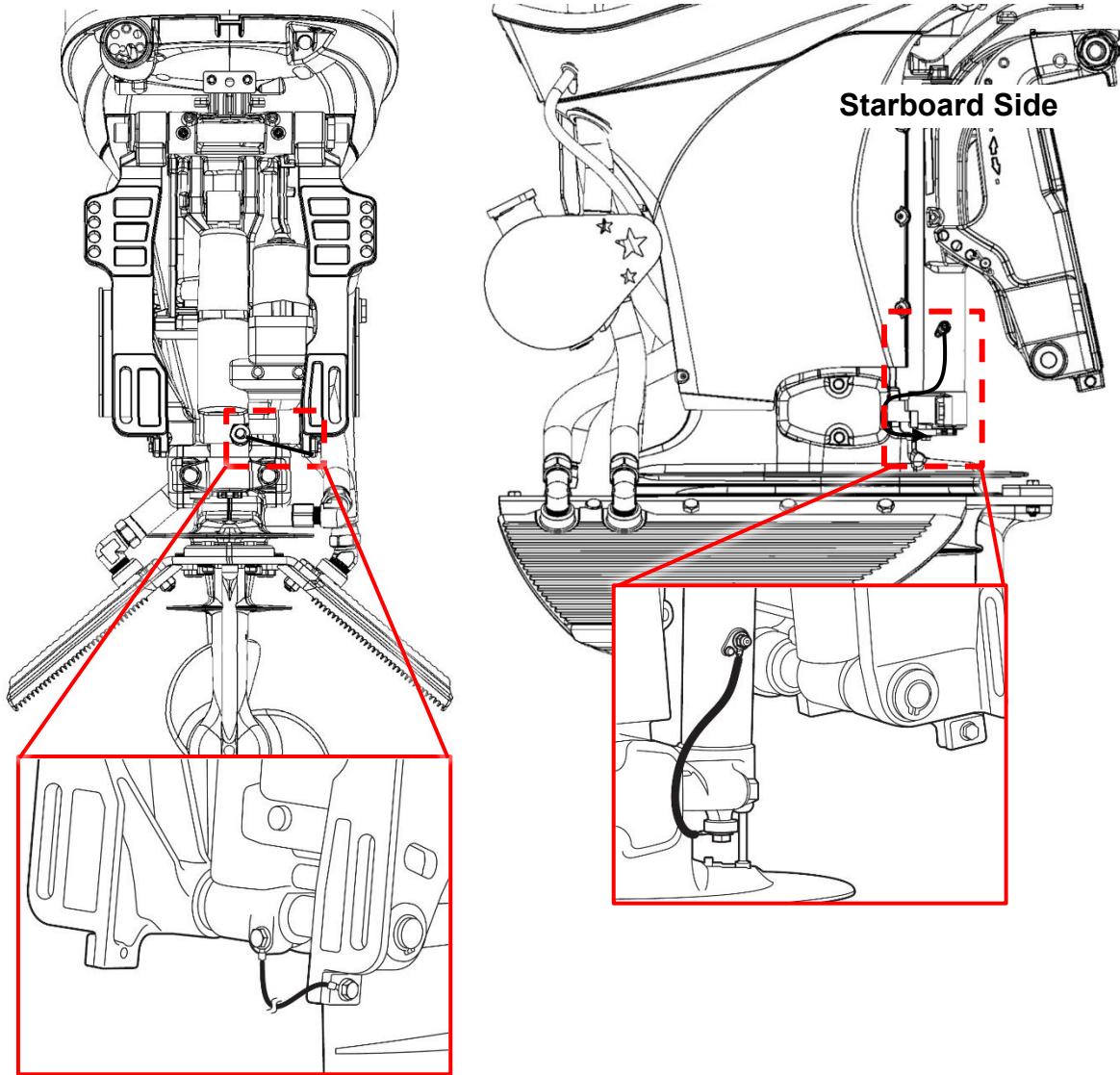
Port Side

10.16. Ground Wire Inspection

Ground wires make an electrical connections with sacrificial anodes to protect from galvanic corrosion.

The Ground Wires require inspection and possible replacement at hourly or time intervals. See Periodic Inspection pg. 9-4 for normal inspection intervals.

1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.
⚠️ WARNING: You may be injured from high engine temperatures if you attempt maintenance directly after operation.
2. Inspect each bolt and ground wire as displayed in the diagram. If an anode is eroded more than 1/3 of original size, replace it. If a wire is damaged, replace it.
3. At each inspection point, re-tighten the attaching bolts as they are likely to be subjected to galvanic corrosion.
4. Record any Ground Wire inspection and replacement information on your maintenance log.



10.17. Grease Points

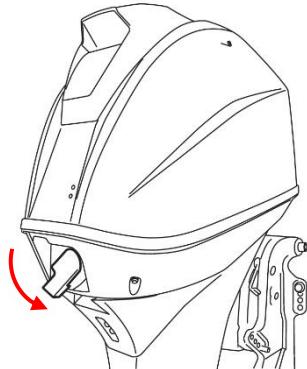
The following points require grease at hourly or time intervals. See Periodic Inspection pg. 9-4 for normal greasing intervals.

1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.
⚠ WARNING: You may be injured from high engine temperatures if you attempt maintenance directly after operation.
2. Disconnect the external fuel tank from the engine. See *Disconnect External Fuel Tank* pg. 6-6.

⚠ DANGER ⚠

When tilting the outboard motor fully up for more than a few minutes, disconnect the fuel hose first or fuel may leak, potentially catching fire.

3. Lower the Cowl Hook Lever to unlock the top cowl. Remove the top cowl.

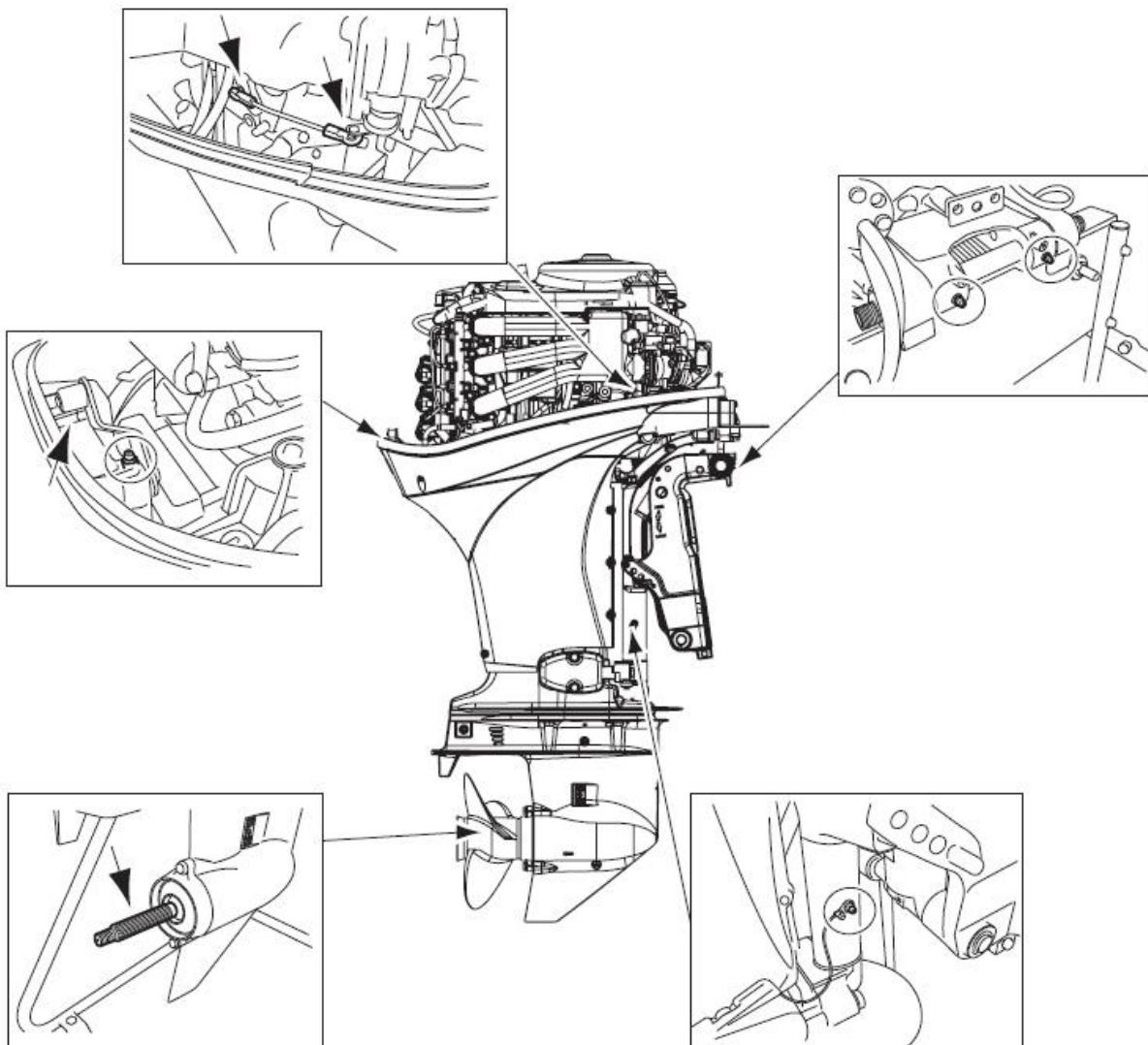


4. Tilt up the outboard motor and lock the tilt with the tilt stopper. See *Tilt Up & Lock* pg. 6-30.

⚠ DANGER ⚠

Do not go under the outboard motor tilted up and locked, or accidental fall of outboard motor could lead to severe personal injury

5. Apply waterproof grease to the parts shown below.
6. Record the greasing information on your maintenance log.

Grease Points

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11. Adjustments

11.1. Tiller Handle Steering Friction Adjustment

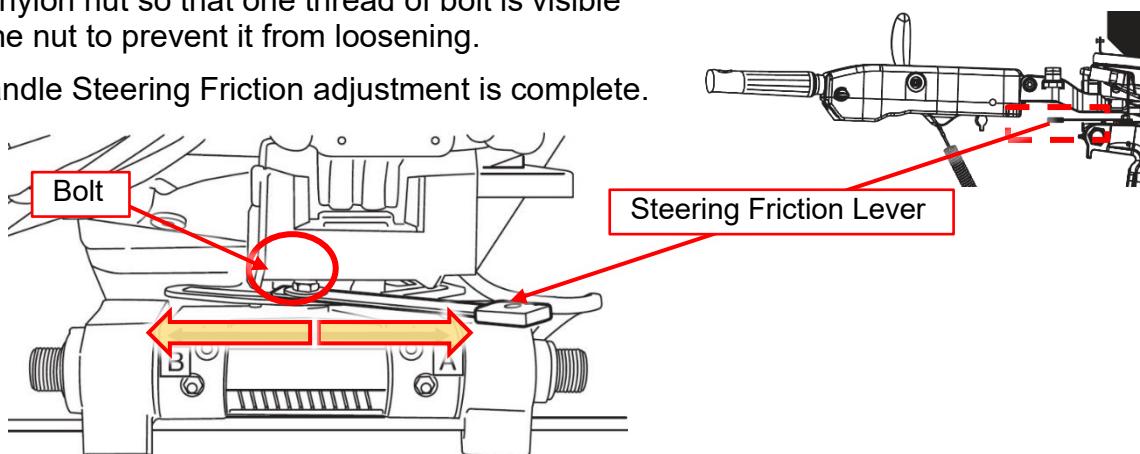
Tiller Handles are optional parts. Refer to the manufacturer's documentation for specific details and procedures.

Use the following procedure to adjust the tiller handle to achieve the desired steering friction (drag). The tiller handle may also be adjusted to prevent the outboard motor from moving during transport on a trailer. See *Trailering* pg. 7-1 for details.

DANGER

DO NOT overtighten the steering friction lever, it could result in difficulty of movement resulting in the loss of control causing an accident that could lead to severe injury

1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.
WARNING: You may be injured from high engine temperatures if you attempt adjustments directly after operation.
2. Loosen the nylon nut holding the friction lever in place.
3. Move lever towards B to tighten/increase friction and move lever towards A to loosen/decrease friction.
4. Tighten nylon nut so that one thread of bolt is visible above the nut to prevent it from loosening.
5. Tiller Handle Steering Friction adjustment is complete.



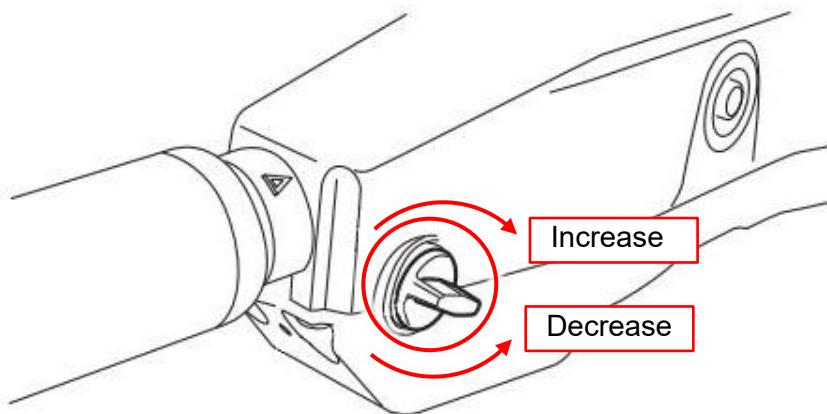
11.2. Tiller Handle Throttle Friction Adjustment

Use the following procedure to adjust the tiller handle throttle grip to achieve the desired friction. Tiller Handles are optional parts. Refer to the manufacturer's documentation for specific details and procedures.

⚠ DANGER ⚠

DO NOT overtighten the steering friction lever, it could result in difficulty of movement resulting in the loss of control causing an accident that could lead to severe injury

1. Stop the engine. See *Stopping the Engine* pg. 6-22.
2. Adjust the throttle adjustment screw:
 - Decrease friction: turn counterclockwise.
 - Increase friction: turn clockwise



3. Tiller Handle Throttle adjustment is complete.

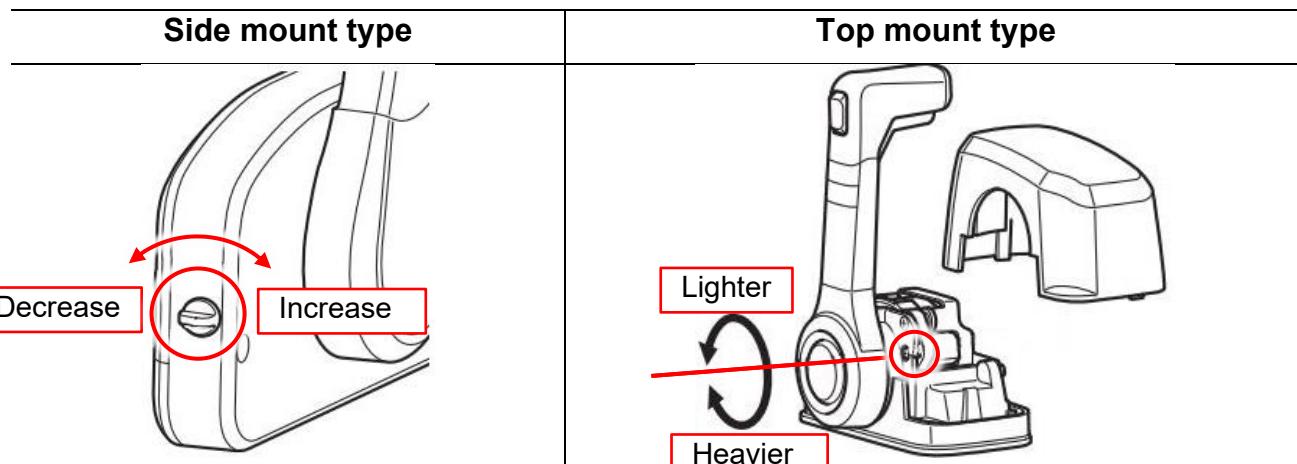
11.3. Remote Control Throttle Friction Adjustment

Use the following procedure to adjust the side mount or top mount RC handle to achieve the desired steering friction (drag). Remote controls are optional parts. Refer to the manufacturer's documentation for specific details and procedures.

DANGER

DO NOT overtighten the steering friction lever, it could result in difficulty of movement resulting in the loss of control causing an accident that could lead to severe injury

1. Stop the engine. See *Stopping the Engine* pg. 6-22.
2. To adjust the friction of the remote control lever, turn the throttle friction adjustment screw on the front of the remote control. Turn clockwise to increase the friction and counterclockwise to decrease it.



3. RC Throttle adjustment is complete.

11.4. Trim Tab Adjustment

If straight-line cruising cannot be achieved, adjust the trim tab located under the anti-ventilation plate.

1. Stop the engine. See *Stopping the Engine* pg. 6-22.
2. Disconnect the external fuel tank from the engine. See *Disconnect External Fuel Tank* pg. 6-6.

⚠ DANGER ⚠

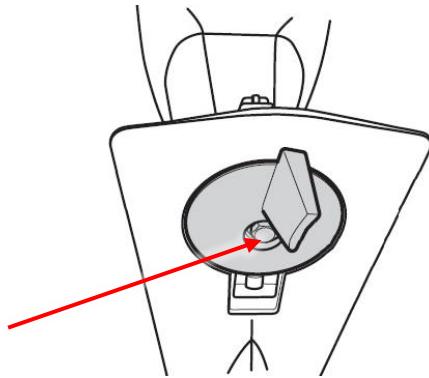
When tilting the outboard motor fully up for more than a few minutes, disconnect the fuel hose first, or fuel may leak, potentially catching fire.

3. Tilt up the outboard motor and lock the tilt with the tilt stopper. See *Tilt Up & Lock* pg. 6-30.

⚠ DANGER ⚠

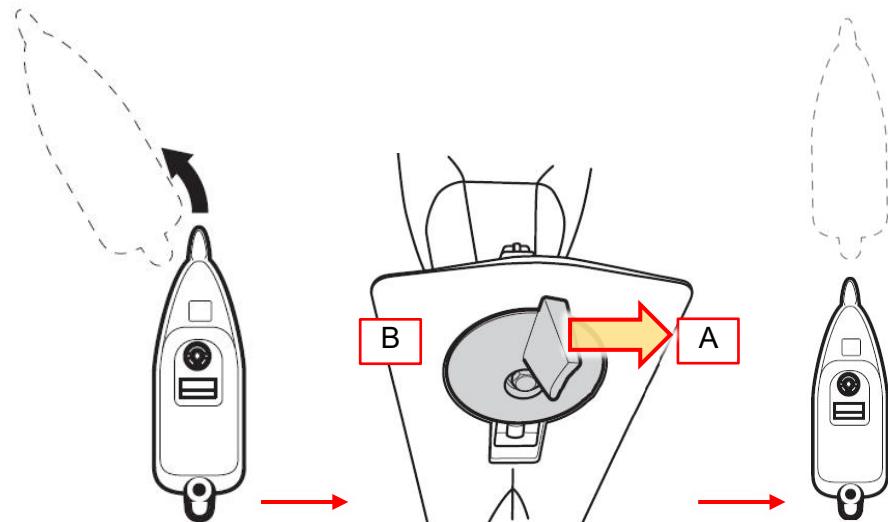
Do not go under the outboard motor tilted up and locked, or accidental fall of outboard motor could lead to severe personal injury

4. Loosen the trim tab fixing bolt.

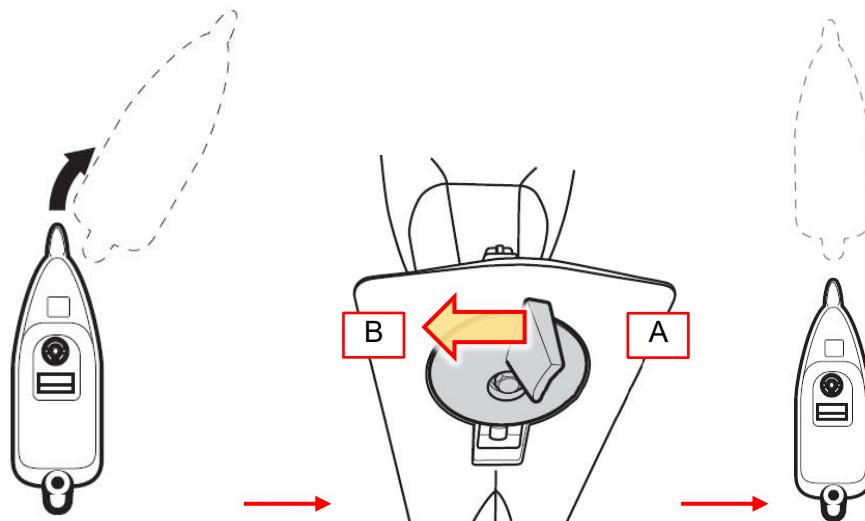


5. Adjust the Trim Tab right or left.

- If the boat veers toward the left, turn the trim tab towards A (left from rear of boat).



- If the boat veers toward the right direct, turn the trim tab towards B (right from rear of boat).



6. Tighten trim tab fixing bolt.

 7. Release tilt stopper from the machined groove and tilt the outboard motor down. See *Unlock & Tilt Down* pg. 6-31.

8. Operate the motor on the boat at a slow speed to test the trim tab positioning for straight line cruising.

⚠️ WARNING Inappropriate adjustment of trim tab may cause steering difficulty.

9. Trim Tab adjustment is complete.

10. Record adjustment information on your maintenance log.

11.5. Trim Angle

The trim angle of the outboard motor may be adjusted to suit the transom angle of the hull, and load conditions.

1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.
⚠️ WARNING: You may be injured from high engine temperatures if you attempt adjustments directly after operation.
2. Disconnect the external fuel tank from the engine. See *Disconnect External Fuel Tank* pg. 6-6.

⚠️ DANGER ⚠️

When tilting the outboard motor fully up for more than a few minutes, disconnect the fuel hose first, or fuel may leak, potentially catching fire.

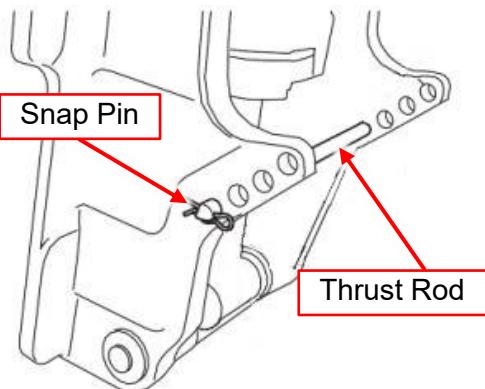
3. Tilt up the outboard motor and lock the tilt with the tilt stopper. See *Tilt Up & Lock* pg. 6-30.

⚠️ DANGER ⚠️

Do not go under the outboard motor tilted up and locked, or accidental fall of outboard motor could lead to severe personal injury

4. Remove the snap pin and thrust rod.

⚠️ WARNING: DO NOT put hand or finger in between outboard motor body and clamp bracket when adjusting trim angle.

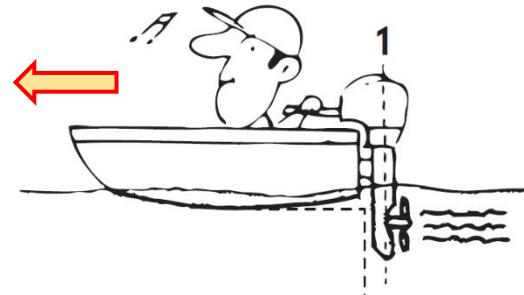


5. Choose an appropriate trim angle that will allow the anti-ventilation plate to run parallel to the water surface during operation.

⚠️ WARNING: Excessive or unsuitable trim up or down may lead to unstable boat operation, potentially causing the steering difficulty that may lead to accidents during cruising

Proper Trim Angle

The position of the thrust rod is correct if the hull is horizontal during operation.



Improper Trim Angle

Bow rises too high

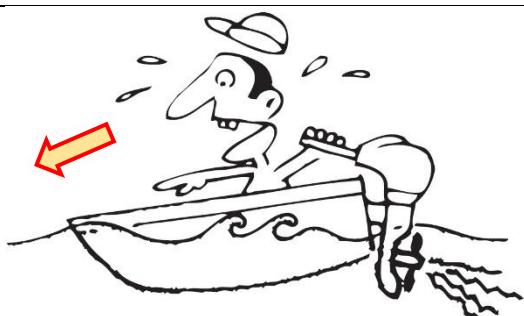
Set the thrust rod lower if the bow of the boat rises above horizontal.



Improper Trim Angle

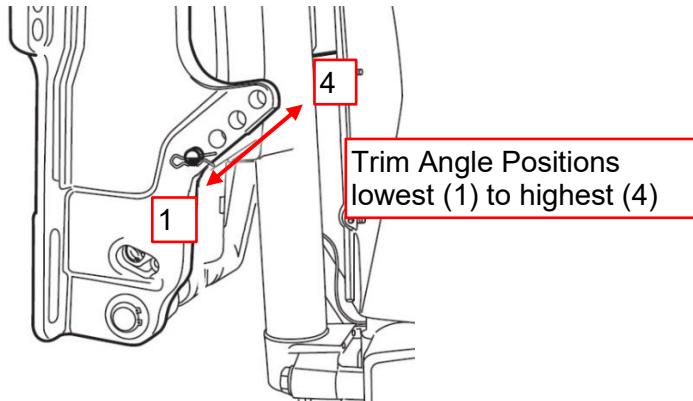
Bow dips into the water

Set the thrust rod higher if the bow of the boat is below horizontal.



6. Reinstall the thrust rod in the desired position:

- If the bow is too high, lower the Thrust Rod.
- If the bow is too low, raise the Thrust Rod.



7. Secure the snap pin.

8. Release tilt stopper from the machined groove and tilt the outboard motor down. See *Unlock & Tilt Down* pg. 6-31.

9. Run the motor at a slow speed to test the trim position for stability and safety.

⚠️ WARNING Do not cruise at high speed if improper trim position is suspected. Stop the boat and readjust the trim angle before continuing cruise.

10. Trim Angle adjustment is complete.

11. Record adjustment information on your maintenance log.

12. Troubleshooting

12.1. Submerged Outboard Motor Recovery

After taking your outboard motor out of the water, immediately take it to your dealer.

The following are the emergency measures to be taken for a submerged outboard motor, if you cannot take it to your dealer right away.

IMPORTANT: Do not attempt to start the submerged outboard motor immediately after it is recovered, or engine could be severely damaged.

1. Wash the outboard motor with fresh water to remove salt or dirt. See *Cleaning the Outboard Motor* pg. 10-2.
2. Follow steps in *Engine Oil & Oil Filter - Replace* pg. 10-6 to remove the engine oil drain screw and completely drain the water from the engine.
3. Remove the spark plugs. See *Spark Plug Inspection & Replacement* pg. 10-28.
4. Follow steps in *Emergency Starting* pg. 6-10 by pulling emergency starter rope several times to completely drain the water from the engine.
5. Finish steps in *Engine Oil & Oil Filter - Replace* pg. 10-6 to replace oil filter and oil to the correct level.
6. Prepare the Spark Plugs for off-season storage.
 - a) Inject a sufficient amount of engine oil into each combustion chamber through the spark plug holes.
 - b) Pull the emergency starter rope several times to circulate the oil throughout the outboard motor.

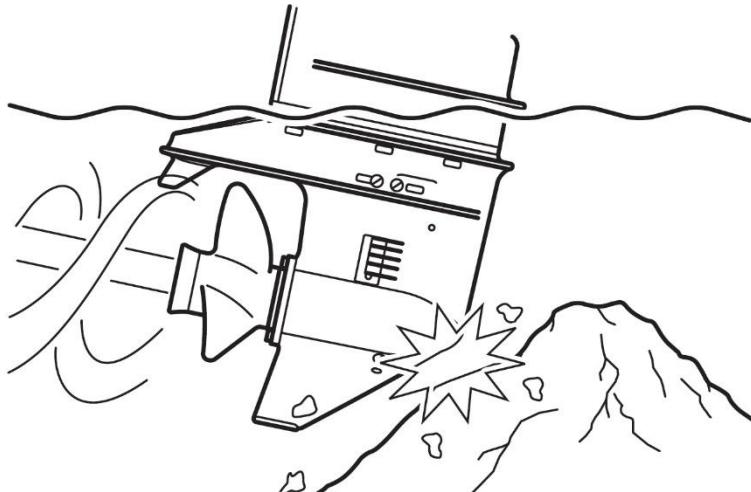
NOTE: The oil and filter may need to be changed again after running a short period to get all moisture completely out of the crankcase.

12.2. Striking Underwater Object

Follow the procedure below and consult a Freedom Outboard dealer as soon as possible.

IMPORTANT: Striking the bottom or an underwater object may severely damage the outboard motor.

1. Stop the engine and allow it to cool. See *Stopping the Engine* pg. 6-22.
⚠️ WARNING: You may be injured from high engine temperatures if you attempt maintenance directly after operation.
2. Check the control system, gear case, boat transom, etc.
3. Return to the nearest harbor slowly and carefully.
4. Consult a Freedom Outboard to check the outboard motor before operation again.





Troubleshooting

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12.3. Warning System Indicators & Faults

If outboard motor encounters an abnormal condition or fault, the warning buzzer will emit a continuous beep or intermittent short beeps and the warning lamp (LED) will synchronize with the buzzer and engine speed may be limited (engine will not be stopped).

Placement of warning lamps differs depending on the type of motor control (tiller or RC mount) See *Warning Lamp Locations* pg. 3-15.

For single warning lamps, use the A lamp column only.

Warning Indicators				ESG	Description of faults or notice	Remark	Remedy
Sound	A Lamp	B Lamp	C Lamp				
Continuous	ON	ON	ON		Normal system test when key on	1 second	--
Continuous				High speed ESG	Engine speed exceeds maximum allowable RPM	Approx. 6,200 min ⁻¹ (rpm)	1
Continuous	ON			Low speed ESG	Low oil pressure		2
Continuous		Flashing		Low speed ESG	Coolant temp. is high	Over 85°C/185°F	3
Continuous	Flashing	Flashing	Flashing	Forced Idling	Coolant temp is abnormally high	Over 140°C/284°F	3
			Flashing		Battery voltage is low	Engine is stopped under 9V	4
	Flashing	Flashing	Flashing	Low speed ESG	Malfunction of sensor		4
	Flashing	Flashing	Flashing		Malfunction of electrical part		4
	Flashing				Inform the recommended timing of engine oil replacement (every 100 hrs.)	A lamp ON 1 sec. and OFF 9 sec.	5
One beep					Lowest idling speed of variable idling system		--
Two beeps					Highest idling speed of variable idling system		--

ESG Definitions

Highspeed ESG (Electronic Safety Governor)

High speed ESG is a device to prevent over revolution of the engine. If the load to the engine becomes light for some reason, it runs at a higher speed than usual.

In such a case, the buzzer sounds and the ESG is activated to not ignite the spark plug. The engine speed varies and is controlled under $6,200 \text{ min}^{-1}$ (rpm). Engine runs rough until throttle is reduced.

Low speed ESG

Low speed ESG is a device to prevent the engine from getting damaged.

If the engine has problems with coolant, oil pressure, and/or sensors, the low speed ESG is activated to not ignite the spark plug and disable fueling. The engine speed varies and is controlled under $3,000 \text{ min}^{-1}$ (rpm). be limited to $2,800 \text{ min}^{-1}$ (rpm), however you should not continue to run engine.

Remedies

Remedy	Solution
1	<ol style="list-style-type: none">1. Reduce the throttle to less than half open throttle2. Move to a safe place quickly.3. Stop the engine.4. Check the propeller for bent or damaged blades. Replace if necessary.5. Consult a Freedom Outboard authorized dealer if the engine shows the same result, even after replacing the propeller with a new one.
2	<ol style="list-style-type: none">1. Move to a safe place quickly.2. Stop the engine until it cools down.3. Check the engine oil level and add engine oil if necessary.4. Consult a Freedom Outboard authorized dealer of the engine oil level is too low or too high.
3	<ol style="list-style-type: none">1. Move to a safe place quickly.2. Stop the engine.3. Remove any foreign matter on the gear case and propeller.4. Check the coolant from the coolant tank, replenish as necessary.5. Consult a Freedom Outboard authorized dealer if there is no flow of coolant.
4	Consult a Freedom Outboard authorized dealer.
5	Replace the engine oil and reset the indicator. See <i>Engine Oil & Oil Filter - Replace</i> pg. 10-6.

12.4. Troubleshooting Chart

If you encounter a problem, check the list below to determine the cause and to take the proper action. A FREEDOM OUTBOARD authorized dealer will always be happy to provide any assistance and information.

										Possible cause		
		Difficult to start engine	Engine runs erratically	Low engine speed/Poor boat speed	Battery will not hold charge	Starter motor will not crank	Power T & T inoperative	Warning lamp A ON	Warning lamp B Flash	Warning lamp C Flash	Three warning lamps Flash	Warning buzzer ON
FUEL SYSTEM		■										Empty fuel tank
		■	■	■								Incorrect connection of fuel system
		■	■	■								Air entering fuel line
		■	■	■								Deformed or damaged fuel hose
		■	■	■								Closed air vent on fuel tank
		■	■	■								Clogged fuel filter or fuel pump
		■	■	■								Fuel pump malfunction
				■								Use of improper engine oil
ELECTRICAL SYSTEM		■	■	■								Use of improper gasoline
		■	■	■								Not enough fuel supply by primer
		■	■	■	■	■	■	■	■	■		Electric components out of range or improper or loose wiring connection
		■	■	■								Spark plug other than specified
		■	■	■								Dirt, soot, etc. on spark plug
		■										No spark or weak spark
		■										Short circuit of engine stop switch
		■										Lack of stop switch lock plate
				■					■			Rectifier failure
		■			■	■						Blown 30 amp fuse in the starting circuit
		■			■							Not shifted into neutral position
		■			■	■	■		■			Weak battery or battery connections are loose or corroded
		■			■		■					Ignition key switch failure
		■			■							Starter motor or starter solenoid failure
					■							Power trim & tilt switch defective, solenoid is defective.

		Possible cause											
COMPRESSION & OIL SYSTEM		Difficult to start engine	Engine runs erratically	Low engine speed/Poor boat speed	Battery will not hold charge	Starter motor will not crank	Power T & T inoperative	Warning lamp A ON	Warning lamp B Flash	Warning lamp C Flash	Three warning lamps Flash	Warning buzzer ON	
OTHERS	Low compression	■	■	■									
	Carbon deposits in the combustion chamber	■	■	■									
	Incorrect valve clearance	■	■	■									
	Low oil pressure/level, oil pump failure, clogged oil filter (pressure switch ON)		■										
	Insufficient coolant flow, clogged or defective pump.	■	■										
	Faulty thermostat		■	■									
	Cavitation or ventilation	■	■	■									
	Incorrect propeller selection	■	■	■									
	Damaged or bent propeller	■	■	■									
	Improper thrust rod position	■	■	■									
	Unbalanced load on boat	■	■	■									
	Transom too high or too low	■	■										
	A great deal of air is contained inside pump.		■										
	Insufficient throttle aperture		■										
	Plug in cooling lines/low coolant		■										

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13. Maintenance Log

Please use this chart as a record of the work required as specified in this Owner's Manual. See *Periodic Inspection* pg. 9-4 for procedure links and more information.

Maintenance Schedule	Maintenance	Date Performed
1 st 20 hours or 1 st month	Check & clean or replace fuel filter	
	Check & clean or replace hoses	
	Clean fuel tank	
	Check & clean fuel tank cap	
	Check & clean fuel pump	
	Check gaps on spark plugs	
	Check ignition timing (Freedom Outboard service)	
	Check battery installation ,fluid quantity, gravity	
	Replace engine oil	
	Replace oil filter	
	Check and adjust valve clearance (Freedom Outboard service)	
	Check propeller for bent blades, damage and wear, replace as necessary	
	Replace gear oil, manually operate	
	Check for wear or damage on coolant pump	
	Check & replenish PTT oil, manually operate	
	Check & re-tighten bolts & nuts	
	Apply grease to grease points	
	Check outer equipment for corrosion	
	Check Coolant levels	
3 months or 50 hrs.	Check & clean or replace fuel filter	
	Check & clean or replace hoses	
	Clean fuel tank	
	Check & clean fuel tank cap	
	Check & clean fuel pump	
	Check battery installation ,fluid quantity, gravity	
	Check propeller for bent blades, damage and wear, replace as necessary	
	Check and replenish gear oil, manually operate	
	Check for wear or damage on coolant pump	
	Check function of warning system (Freedom Outboard service)	
	Check & re-tighten bolts & nuts	
	Apply grease to grease points	
	Check outer equipment for corrosion	
	Check Coolant levels	

Maintenance Log

Maintenance Schedule	Maintenance	Date Performed
6 months or 100 hrs.	Check gaps on spark plugs Check ignition timing (Freedom Outboard service) Check starter motor for salt deposits and check battery cable connection Replace engine oil Check and adjust valve clearance (Freedom Outboard service) Check timing belt (Freedom Outboard service) Check thermostat (Freedom Outboard service) Replace gear oil, manually operate Check & replenish PTT oil, manually operate Check Coolant levels Check for corrosion and deformation of Anode (Freedom Outboard service)	
9 months or 150 hrs.		
12 months or 200 hrs.	Check & clean or replace fuel filter Replace oil filter Check for wear or damage on coolant pump Replace impeller every 12 months.	
15 months or 250 hrs.		
18 months or 300 hrs.	Your outboard motor should receive careful and complete inspection at 300 hours. This is the best time for major maintenance procedures to be carried out. (Freedom Outboard service)	
21 months or 350 hrs.		
24 months or 400 hrs.		
27 months or 450 hrs.		
30 months or 500 hrs.		
33 months or 550 hrs.		
36 months or 600 hrs.		
39 months or 650 hrs.		
42 months or 700 hrs.		
45 months or 750 hrs.		
48 months or 800 hrs.		
51 months or 900 hrs.		



Troubleshooting

Maintenance Schedule	Maintenance	Date Performed
57 months or 950 hrs.		
60 months or 1000 hrs.		

Notes:

Notes: