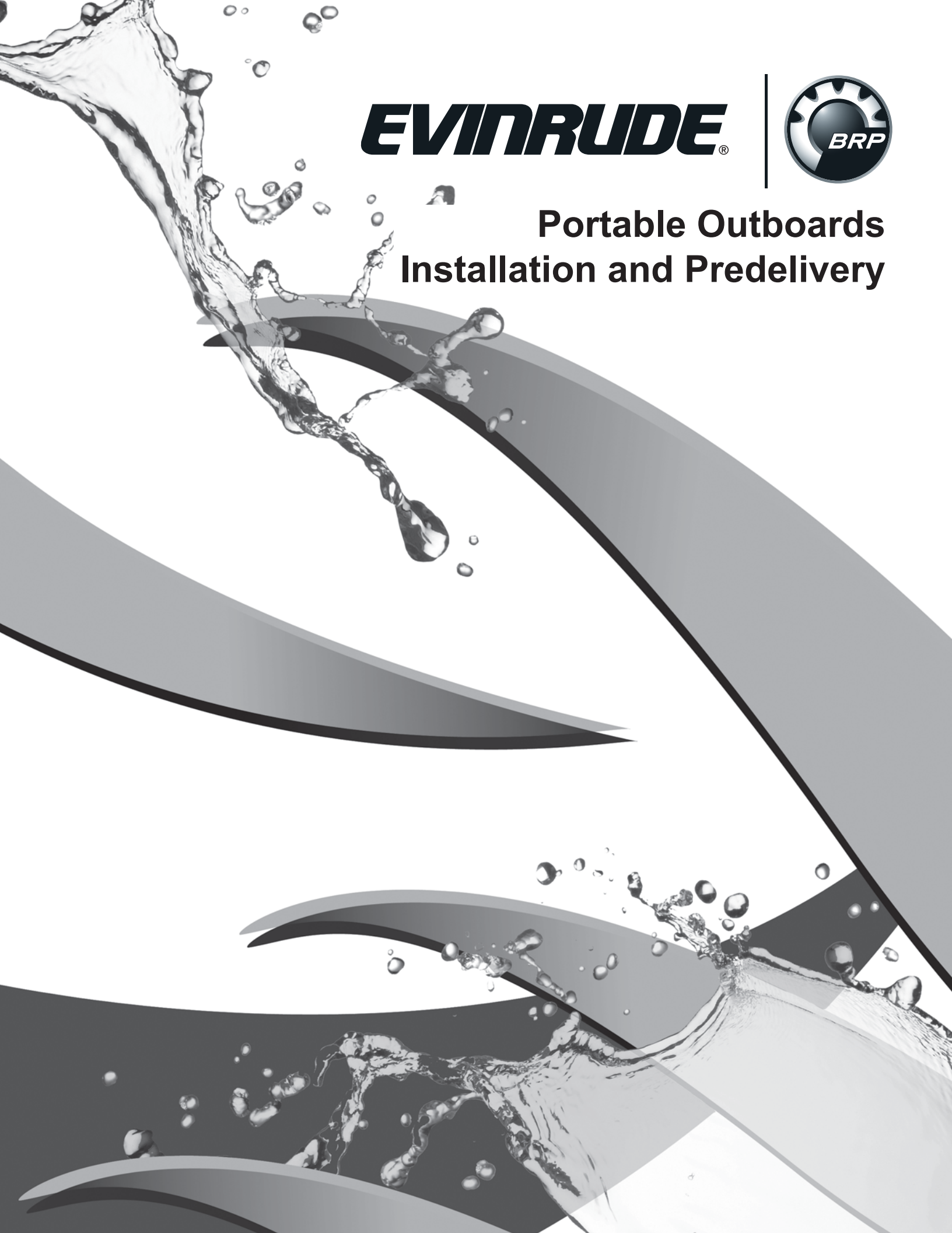

Portable Outboards
Installation and Predelivery

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HPF XR™ Gearcase Lubricant
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INSTALLATION & PREDELIVERY

TABLE OF CONTENTS

SAFETY INFORMATION

This publication is written for qualified, factory-trained technicians who are already familiar with the use of *Evinrude/Johnson* Special Tools. The included information is not a substitute for work experience. It is an organized guide for reference, repair, and/or maintenance.

The following symbols and/or signal words may be used in this document:

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE **Indicates an instruction which, if not followed, could severely damage engine components or other property.**

These safety alert signal words mean:

ATTENTION!
BECOME ALERT!
YOUR SAFETY IS INVOLVED!

IMPORTANT: Identifies information that controls correct assembly and operation of the product.

DO NOT perform any work until you have read and understood these instructions completely.

Torque wrench tightening specifications must strictly be adhered to.

Should removal of any locking fastener (lock tabs, locknuts, or patch screws) be required, always replace with a new one.

When replacement parts are required, use *Evinrude/Johnson Genuine Parts* or parts with equivalent characteristics, including type, strength and material. Use of substandard parts could result in injury or product malfunction.

Always wear EYE PROTECTION AND APPROPRIATE GLOVES when using power tools.

Unless otherwise specified, engine must be OFF when performing this work.

Always be aware of parts that can move, such as flywheels, propellers, etc.

Some components may be HOT. Always wait for engine to cool down before performing work.

If you use procedures or service tools that are not recommended in this manual, YOU ALONE must decide if your actions might injure people or damage the outboard.

This document may be translated into other languages. In the event of any discrepancy, the English version shall prevail.

⚠ DANGER

Contact with a rotating propeller is likely to result in serious injury or death. Assure the engine and prop area is clear of people and objects before starting engine or operating boat. Do not allow anyone near a propeller, even when the engine is off. Blades can be sharp and the propeller can continue to turn even after the engine is off. Remove propeller before servicing and when running the outboard on a flushing device.

DO NOT run the engine indoors or without adequate ventilation or permit exhaust fumes to accumulate in confined areas. Engine exhaust contains carbon monoxide which, if inhaled, can cause serious brain damage or death.

⚠ WARNING

Wear safety glasses to avoid personal injury, and set compressed air to less than 25 psi (172 kPa).

The motor cover and flywheel cover are machinery guards. Use caution when conducting tests on running outboards. DO NOT wear jewelry or loose clothing. Keep hair, hands, and clothing away from rotating parts.

During service, the outboard may drop unexpectedly. Avoid personal injury; always support the outboard's weight with a suitable hoist or the tilt support bracket during service.

To prevent accidental starting while servicing, disconnect the battery cables at the battery. Twist and remove all spark plug leads.

The electrical system presents a serious shock hazard. DO NOT handle primary or secondary ignition components while outboard is running or flywheel is turning.

Gasoline is extremely flammable and highly explosive under certain conditions. Use caution when working on any part of the fuel system.

Protect against hazardous fuel spray. Before starting any fuel system service, carefully relieve fuel system pressure.

Do not smoke, or allow open flames or sparks, or use electrical devices such as cellular phones in the vicinity of a fuel leak or while fueling.

Keep all electrical connections clean, tight, and insulated to prevent shorting or arcing and causing an explosion.

Always work in a well ventilated area.

Replace any locking fastener (locknut or patch screw) if its locking feature becomes weak. Definite resistance to tightening must be felt when reusing a locking fastener. If replacement is indicated, use only authorized replacement or equivalent.

ABBREVIATIONS USED IN THIS MANUAL

Units of Measurement

A	Amperes
amp-hr	Ampere hour
fl. oz.	fluid ounce
ft. lbs.	foot pounds
HP	horsepower
in.	inch
in. Hg	inches of mercury
in. lbs.	inch pounds
kPa	kilopascals
ml	milliliter
mm	millimeter
N·m	Newton meter
P/N	part number
psi	pounds per square inch
RPM	revolutions per minute
°C	degrees Celsius
°F	degrees Fahrenheit
ms	milliseconds
µs	microseconds
Ω	Ohms
V	Volts
VAC	Volts Alternating Current
VDC	Volts Direct Current

List of Abbreviations

ABYC	American Boat & Yacht Council
ATDC	after top dead center
AT	air temperature sensor
BPS	barometric pressure sensor
BTDC	before top dead center
CCA	cold cranking amps
CFR	Code of Federal Regulations
CPS	crankshaft position sensor
EMM	Engine Management Module
EPA	Environmental Protection Agency
ICOMIA	International Council of Marine Industry Associations
ID	Inside dimension
MCA	marine cranking amps
MWS	modular wiring system
NMEA	National Marine Electronics Assoc.
ROM	read only memory
S.A.F.E.	speed adjusting failsafe electronics
SAC	start assist circuit
SAE	Society of Automotive Engineers
SYNC	synchronization
TDC	top dead center
TPS	throttle position sensor
USCG	United States Coast Guard
WOT	wide open throttle
WTS	water temperature sensor

EMISSION-RELATED INSTALLATION INSTRUCTIONS

Failing to follow these instructions when installing a certified engine in a vessel violates federal law (40 CFR 1068.105 (b)), subject to fines or other penalties as described in the Clean Air Act.

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

Manufacturer's Responsibility

Beginning with 1999 model year outboards, manufacturers of marine outboards must determine the exhaust emission levels for each outboard horsepower family and certify these outboards with the United States of America Environmental Protection Agency (EPA). An emissions control information label, showing emission levels and outboard specifications, must be placed on each outboard at the time of manufacture.

Dealer's Responsibility

When performing service on all 1999 and more recent *Evinrude/Johnson* outboards that carry an emissions control information label, adjustments must be kept within published factory specifications.

Replacement or repair of any emission related component must be executed in a manner that maintains emission levels within the prescribed certification standards.

Dealers are not to modify the outboard in any manner that would alter the horsepower or allow emission levels to exceed their predetermined factory specifications.

Exceptions include manufacturer's prescribed changes, such as altitude adjustments, for example.

Owner's Responsibility

The owner/operator is required to have outboard maintenance performed to maintain emission levels within prescribed certification standards.

The owner/operator is not to, and should not allow anyone to, modify the outboard in any manner that would alter the horsepower or allow emissions levels to exceed their predetermined factory specifications.

Tampering with the fuel system to change horsepower or modify emission levels beyond factory settings or specifications will void the product warranty.

EPA Emission Regulations

All new 1999 and more recent *Evinrude/Johnson* outboards are certified to the EPA as conforming to the requirements of the regulations for the control of air pollution from new watercraft marine spark ignition outboards. This certification is contingent on certain adjustments being set to factory standards. For this reason, the factory procedure for servicing the product must be strictly followed and, whenever practical, returned to the original intent of the design. The responsibilities listed above are general and in no way a complete listing of the rules and regulations pertaining to the EPA requirements on exhaust emissions for marine products. For more detailed information on this subject, you may contact the following locations:

VIA U.S. POSTAL SERVICE:

Office of Mobile Sources
Engine Programs and Compliance Division
Engine Compliance Programs Group (6403J)
401 M St. NW
Washington, DC 20460

VIA EXPRESS or COURIER MAIL:

Office of Mobile Sources
Engine Programs and Compliance Division
Engine Compliance Programs Group (6403J)
501 3rd St. NW
Washington, DC 20001

EPA INTERNET WEB SITE:

www.epa.gov

BOAT RIGGING

REMOTE CONTROLS

Control System Selection

Outboard remote control systems provide the operator with tools for:

- Starting and stopping the engine
- Shifting into Forward, Neutral, or Reverse
- Changing engine speed
- Changing the tilt/trim angle of the outboard.

The remote control system must include the following features:

- Throttle stroke must PULL for open
- Start-in-gear prevention
- Emergency stop switch with lanyard

Mechanical control systems use push/pull cables to physically move the shift and throttle components on the outboard.

⚠ WARNING

The remote control used must have start-in-gear prevention. This feature can prevent injuries resulting from unexpected boat movement when the outboard starts.

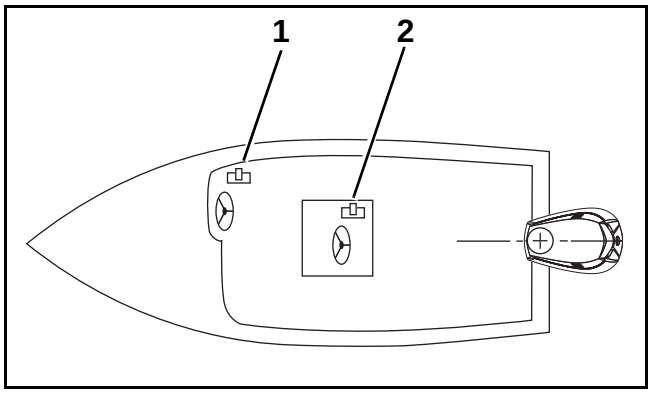
Always install and recommend use of an emergency stop/key switch. Doing so will reduce the risk of personal injury or death should the operator fall away from the controls or out of the boat.

Remote control options are available in the ***Evinrude/Johnson Genuine Parts and Accessories*** catalog.

Control Installation

Plan the installation of remote controls carefully, following all instructions provided with the control.

Select an appropriate location based on the boat configuration.

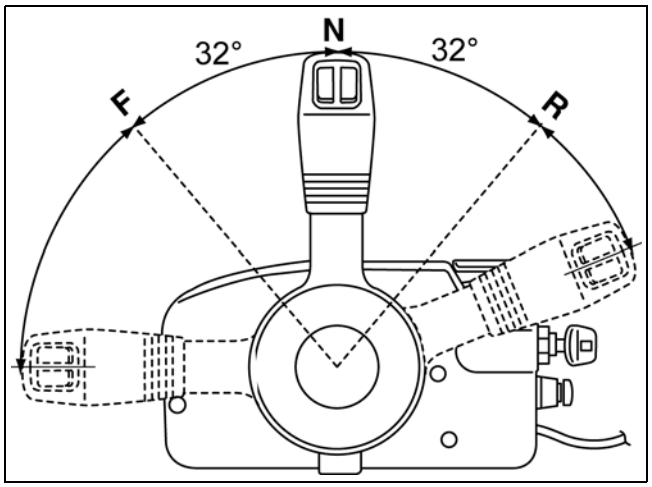


1. Side console
2. Center console

005471

IMPORTANT: The mounting location must be a flat surface and must be strong enough to provide rigid support. Strengthen mounting surface as necessary.

Place remote control at proposed location and check clearance around remote control lever at full throttle in FORWARD and then at full throttle in REVERSE. There must be at least 4 in. (101 mm) of clearance between the handle and any part of the boat throughout the control lever travel.



Typical Control Clearances 008750

Use an appropriate drill template to cut mounting holes. Templates are included with the remote control instructions.

Install the remote control with the hardware provided.

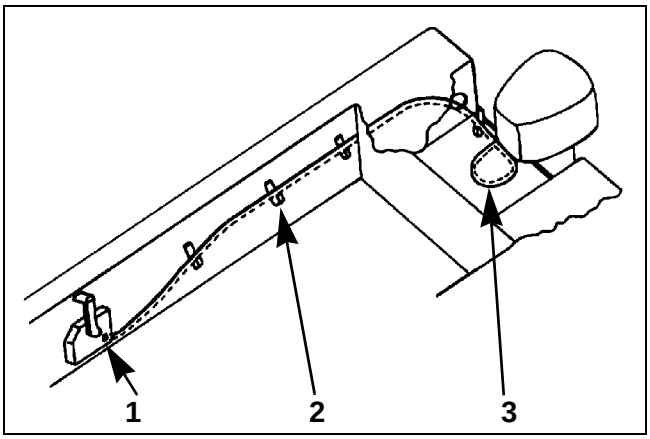
IMPORTANT: Make sure remote control assembly is secure and does not move during operation.

Control Cable Routing

Control cables and harnesses should be routed along a protected path to the rear of the boat and secured to prevent movement or damage.

Harness connections should be mounted in a dry location, away from bilge and motor well areas.

Control cables should be long enough to allow a 12 in. (30 cm) cable loop at the front of the outboard when the cables are routed from the side of the splash well.



1. Surface side-mount remote control DR4277
2. Cable support
3. 12 in. (30 cm) cable loop at front of outboard

BATTERY INSTALLATION

Each outboard requires its own starting battery. Select a battery that meets or exceeds the minimum requirements.

Battery Recommendations

Outboard Model	Battery Rating
9.8–15 HP	650 CCA (800 MCA), 70 amp-hr

Battery Location

Proper installation will prevent battery movement while underway.

- Secure all batteries in protected locations
- Place battery as close to the outboard as possible
- Battery location must provide access for periodic maintenance
- Use battery mounting trays or battery boxes on all battery installations
- Connections and terminals must be covered with an insulator
- Battery connections must be clean and free from corrosion
- Read and understand the safety information supplied with the battery before installation.

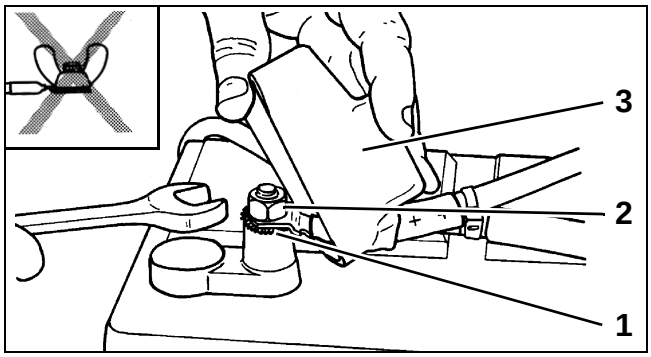
Battery Connections

⚠ WARNING

Keep the battery connections clean, tight, and insulated to prevent their shorting or arcing and causing an explosion. If the battery mounting system does not cover the connections, install protective covers. Check often to see that connections stay clean and tight.

IMPORTANT: Connect the battery positive (+) cable to the battery positive (+) post FIRST. Connect the battery negative (–) cable to the battery negative (–) post LAST.

Install a starwasher on the threaded battery post. Stack cables from the outboard, then cables from accessories. Finish this connection with a hex nut.



Marine Style Battery Post DR5103

1. Starwasher
2. Hex nut
3. Terminal Insulator

NOTICE **Do not use wing nuts to fasten ANY battery cables. Wing nuts can loosen and cause electrical system damage not covered under warranty.**

Tighten all connections securely. Apply *Triple-Guard* grease to prevent corrosion.

Battery Cable Requirements

Evinrude outboards are shipped with stranded copper battery cables for typical installations in which the starting battery is close to the transom.

Specialized outboard installations with extended length battery cables require an increased wire size. Refer to the following table.

	9.8–15 HP
1 to 10 Ft. (.3 to 3 m)	6 Gauge
11 to 15 Ft. (3.4 to 4.6 m)	4 Gauge
16 to 20 Ft. (4.9 to 6.1 m)	2 Gauge

IMPORTANT: Inadequate battery cables can affect the performance of an outboard's high amperage start circuit and the cranking speed of the outboard. DO NOT use aluminum wire cables. Use ONLY AWG stranded copper wire cables.

NOTICE **Insulate all battery positive (+) terminals to prevent shorting.**

FUEL SYSTEM REQUIREMENTS

Regulations and Guidelines

Vessel manufacturer, and/or installer of an EPA certified outboard, must meet minimum specifications for boat fuel systems established by:

- U.S. Environmental Protection Agency (EPA)
  - 40 CFR 1045.112
  - 40 CFR 1060
  - 40 CFR 1068.105(b)
- U.S. Coast Guard (USCG)
  - 33 CFR 183
- American Boat & Yacht Council (ABYC)
  - Standard H-24
  - Standard H-25.

Permanent Fuel Tanks

Permanent fuel tanks must be properly vented outside of the hull.

Remote fuel tank gas fills must be grounded.

Fuel tank pickups should include an anti-siphon valve to prevent fuel flow if a leak occurs in the fuel distribution system.

Portable Fuel Tanks

⚠ WARNING

If engine is equipped with a quick-disconnect fuel hose, you MUST disconnect the fuel hose from the engine and the fuel tank to prevent fuel leaks:

- **Whenever the engine is NOT being used**
- **Whenever the engine is being trailered**
- **Whenever the engine is in storage.**

NOTE: A small amount of fuel may be released when the fuel connector is disonnected.

Store portable fuel tanks in well-ventilated areas, away from heat sources and open flames. Close the vent screw of the fuel tank cap, if equipped, to prevent escape of fuel or fuel vapors which could accidentally ignite. Do not allow disconnected fuel hoses to leak fuel.

Fuel Hose

All fuel hoses used for rigging outboards manufactured after January 1, 2009 must meet EPA permeation requirements for evaporative emissions.

- Use SAE J30R9, or USCG Type B1-15, fuel hose in motor well areas.
- Use USCG Type A1-15 fuel hose between permanent fuel tanks and motor well fittings in inaccessible routings.
- Compliant hoses are labeled with the applicable specification.

1. Specification 007944
2. Date code

Permanently installed fuel hoses should be as short and horizontal as possible.

Use corrosion-resistant metal clamps on permanently installed fuel hoses.

Multi-outboard applications require separate fuel tank pickups and hoses. (A fuel selector switch may be used for “kicker” motors as long as it has enough flow capacity for the larger outboard.)

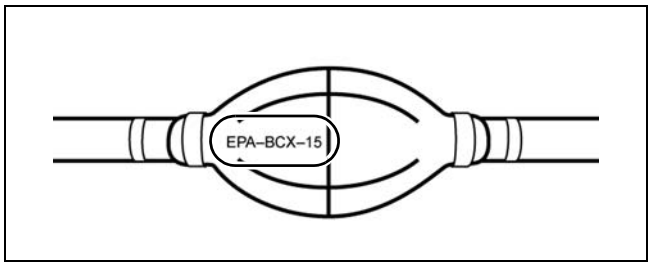
Use only fuel lines (or copper tubing) that meet the **Fuel Flow Requirements** for the outboard.

Fuel System Primer

Outboards require a priming system to refill the fuel system after periods of non-use. The most common priming system is a primer bulb in the fuel supply hose.

All fuel primer bulbs used for rigging outboards manufactured after January 1, 2011 must meet EPA permeation requirements for evaporative emissions.

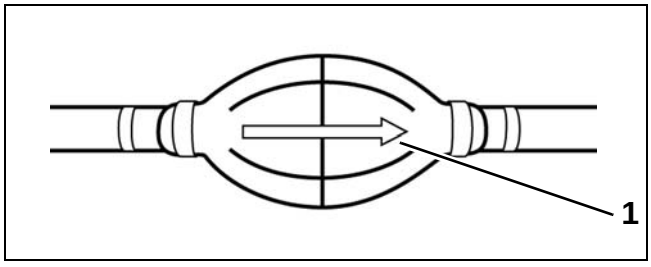
- Use primer bulbs with EPA BCX-15 specification.



EPA BCX-15 Specification 008748

Install the primer bulb as follows:

- The primer bulb must meet the same **Fuel Flow Requirements** as the fuel hose.
- The primer bulb should be easily accessible.
- The arrow on the primer bulb must point in the direction of fuel flow.
- The fuel supply hose must allow the primer bulb to be held with the arrow pointing up during priming.



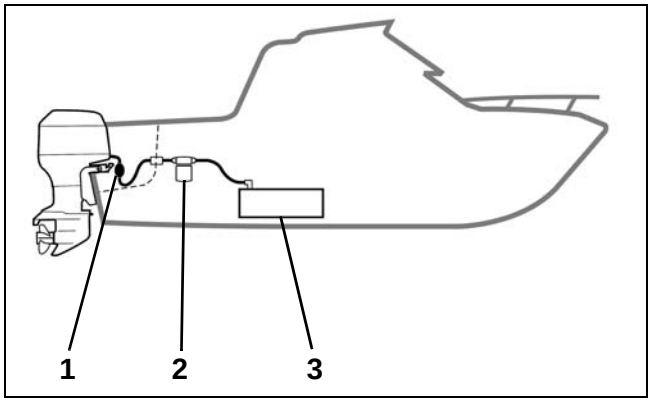
1. Arrow indicates direction of fuel flow 008747

Fuel Filters

Boat-mounted fuel filters and water-separating fuel filter assemblies must meet the required fuel flow and filter specification. Refer to **Fuel Flow Requirements**.

The filter must be mounted to a rigid surface above the full level of the fuel tank and accessible for servicing.

Fuel Filter Assembly, P/N 174176, meets all requirements for a water-separating fuel filter.



Typical Fuel Supply Configuration DRC6797

1. *Primer bulb*
2. *Water separating fuel filter*
3. *Anti-siphon valve, in fuel pick-up of tank*

NOTICE **Avoid using in-line fuel filters external to the outboard. The filter area and flow characteristics may not be adequate for high horsepower outboards.**

Fuel Flow Requirements

	9.8 – 15 HP
Fuel tank pickup tube	1/4 in. (6.4 mm) min. ID
Fuel fittings	5/32 in. (4.1 mm) min. ID
Fuel supply hoses	1/4 in. (6.4 mm) min. ID
Fuel tank pickup screen	100 mesh, 304 grade stainless steel wire, 0.0045 in. wire diameter, 1 in. (25 mm) long
Antisiphon valve	2.5 in. (63.5 mm) Hg maximum pressure drop at 20 gph (76 l/hr) flow
Remote fuel filter	0.4 in. Hg maximum pressure drop at 20 gph (76 l/hr) flow, 150 $in.^2$ (1290 cm^2) of filter area
Maximum fuel pump lift height	Fuel pump should not be located more than 30 in. (76.2 cm) above bottom of fuel tank

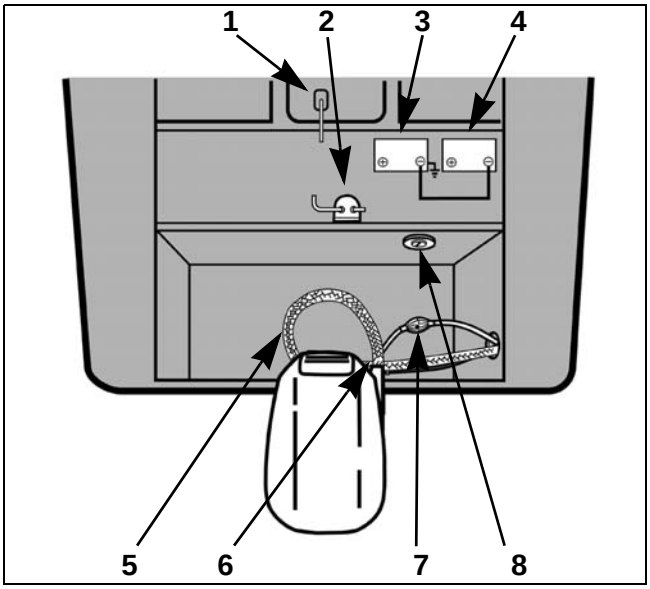
CABLE AND HOSE INSTALLATION

Before installation, identify all required wiring, cables, and hoses:

- Throttle and shift cables
- Instrument harnesses
- Battery cables and switches
- Fuel supply hose
- Primer bulb or primer pump

Determine whether any additional wiring or hoses will be needed for accessory gauges or batteries:

- Speedometer pick-up hose
- Mechanical water pressure gauge hose



Typical outboard installation DRC6487

1. *Anti-siphon valve*
2. *Water separating fuel filter*
3. *Starting battery*
4. *Accessory battery*
5. *Flexweave protective sleeve*
6. *Access cover*
7. *Primer bulb*
8. *Battery switch*

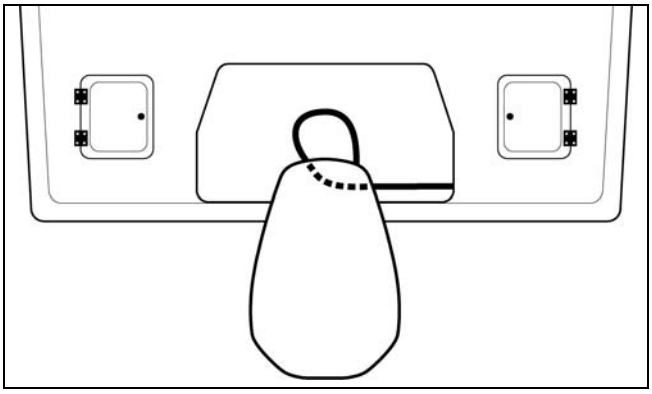
Boat Cable and Harness Routing

⚠ WARNING

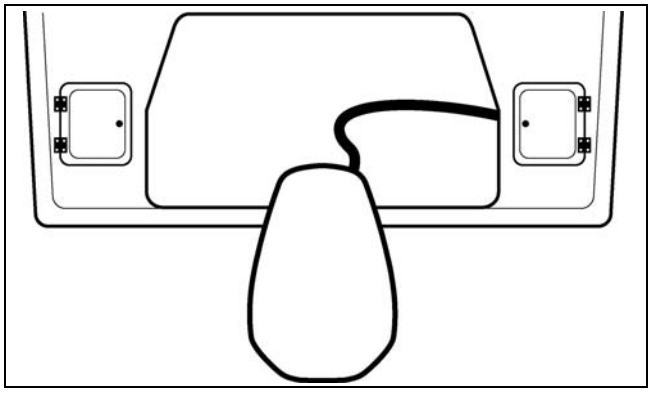
Improper installation and routing of outboard controls could wear, bind, and damage components, causing loss of control.

Remote control cables, wiring, and hoses must follow a similar path into the lower motor covers. Select the best routing for the specific application.

All cables, wiring, and hoses must be long enough to provide adequate slack. Check clearances at all possible combinations of trim angles and steering positions.



Typical Small Splash Well DRC7799



Typical Large Splash Well DRC7797

Battery Cables

When routing battery cables, be sure to:

- Route cables through the battery cable grommet.
- Use the most direct path to route the battery cables to the battery or battery switch.

Fuel Hose

Route fuel hoses with enough slack to allow the primer bulb arrow to point “up” during use.

Install the primer bulb with the arrow pointing in the direction of fuel flow to the outboard.

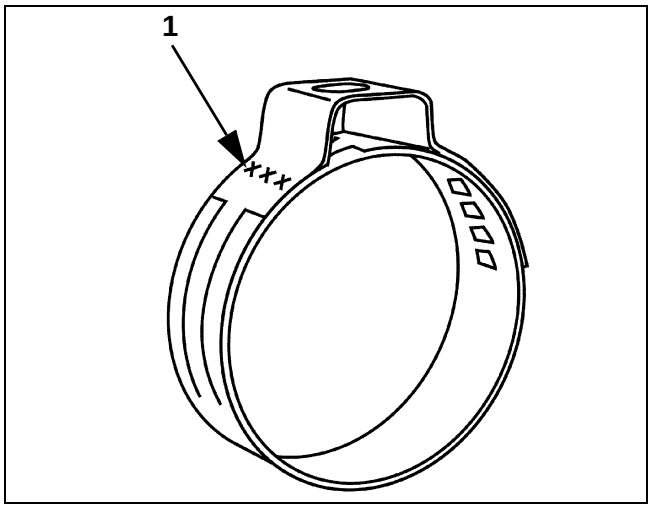
Connect the fuel supply hose from the fuel tank to the fuel quick connect fitting at the outboard.

Oetiker Clamp Servicing

Clamp Identification

Use *Oetiker* clamps for making hose connections. These clamps provide corrosion resistance, minimize the potential for abrasion of rigging components, and provide solid, permanent connections.

The selection and installation of an *Oetiker* clamp is essential in the proper sealing of hose connections. The clamp identification numbers appear on the side of the clamp, near the top of the ear. Refer to **Clamp Selection** chart for dimensions.



1. Clamp identification numbers 000093

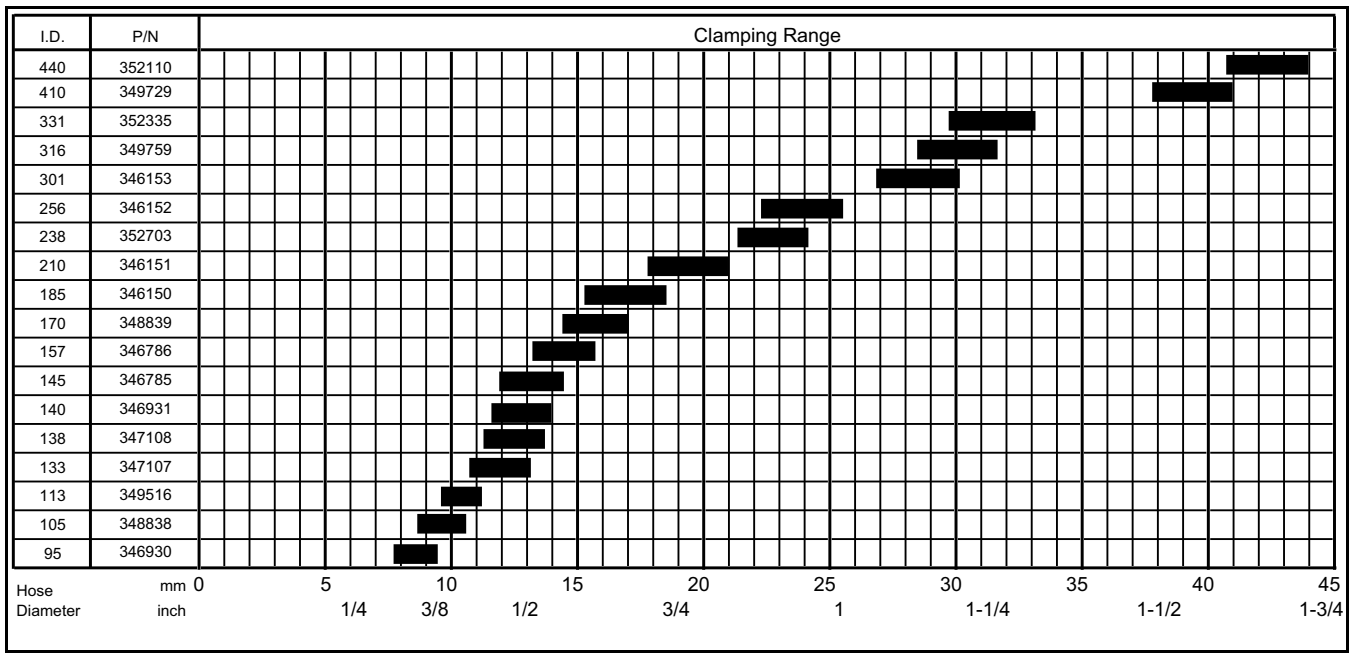
⚠ WARNING

DO NOT re-use *Oetiker* clamps. Fuel leakage could contribute to a fire or explosion.

Clamp Selection

To select the correct size *Oetiker* clamp, measure the outside diameter of the hose when installed on the fitting.

Chose a clamp so that the outside diameter of the hose is approximately in the middle of the clamping range of the clamp.



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Clamp Installation

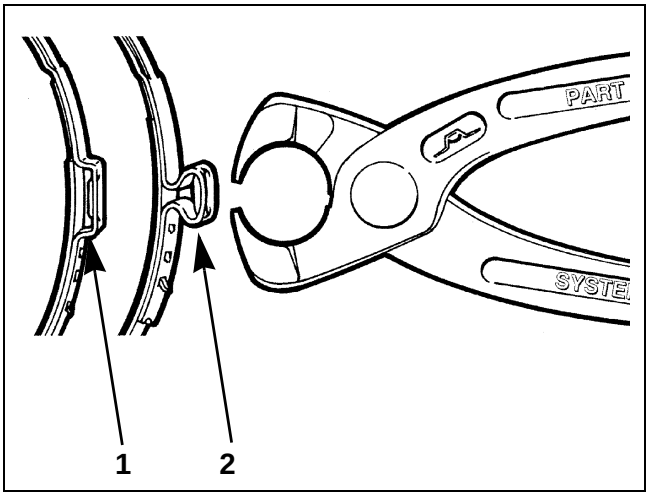
A constant stress should be applied to close the ear clamps. This method ensures a positive stress on the hose and does not result in excessive compression or expansion of the band material.

IMPORTANT: Use only *Oetiker* recommended tools to close *Oetiker* stepless clamps.

Oetiker pincers are available in the *Evinrude/Johnson Genuine Parts and Accessories Catalog*.

DP0886

- Position correct size clamp over hose.
- Install hose on fitting.
- Close clamp ear fully with *Oetiker* pincers (pliers).

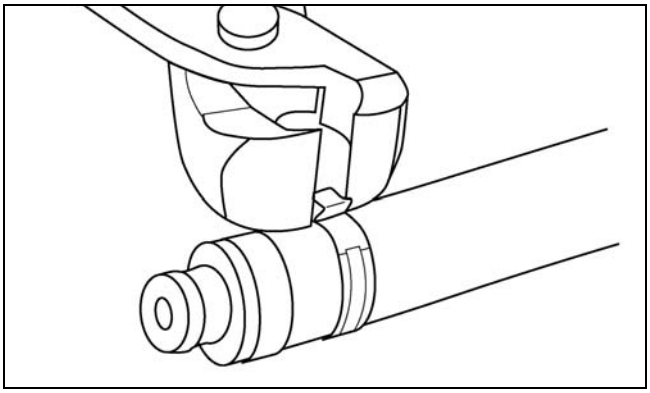


1. Open clamp
2. Closed clamp

000092

Clamp Removal

Method 1: Position *Oetiker* pincers across clamp ear and cut clamp.



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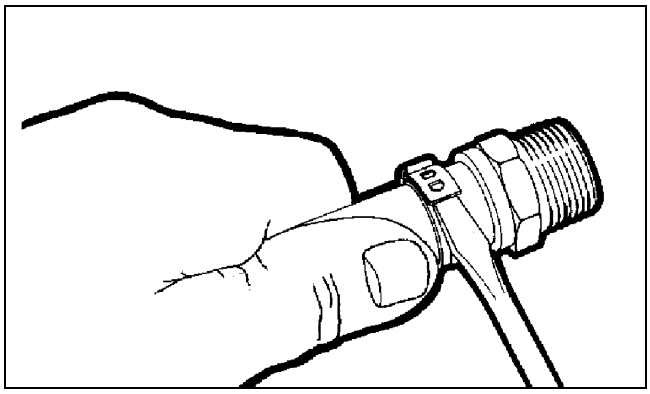
Method 2: Lift end of stepless clamp with screwdriver.



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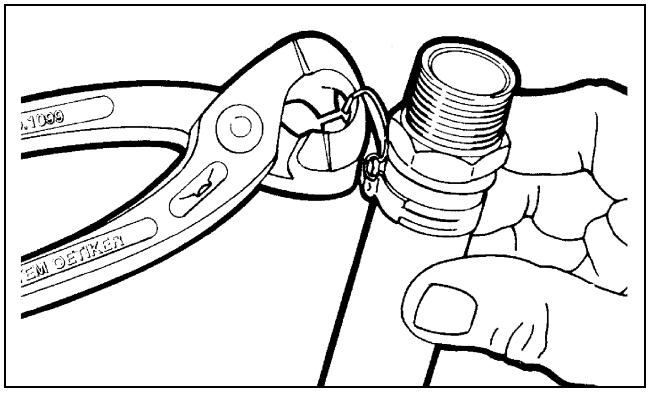
Method 3: Use *Oetiker* pincers (pliers) to grip clamp. Pull clamp off of connection and discard.



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NOTES

Technician's Notes

Related Documents

Bulletins	
Instruction Sheets	
Other	

OUTBOARD INSTALLATION

HULL PREPARATION

Maximum Capacity

⚠ WARNING

Do not overpower the boat by installing an outboard that exceeds the horsepower indicated on the boat's capacity plate. Overpowering could result in loss of control.

Before installing outboard:

- Refer to the boat manufacturer's certification label for maximum horsepower rating.
- Refer to ABYC Standards to determine the maximum horsepower capacity for boats without certification labeling.

1029A

Mounting Surface

Inspect transom surface prior to drilling mounting holes.

- The transom should meet ABYC Standards.
- The transom must be flat.
- The transom angle should be approximately 14 degrees.
- Check transom strength and height.

The stern brackets must contact the flat surface of the transom. Modify trim that prevents the stern brackets from resting against the transom surface. Do not modify stern brackets.

⚠ WARNING

DO NOT install an outboard on a curved or irregular surface. Doing so can wear, bind, and damage components, causing loss of control.

Transom Clearances

Make sure the transom and splash well area provide adequate clearances:

- The top edge of the transom should be wide enough to allow full steering travel. The ABYC standard for most single outboard installations is 33 in. (84 cm).
- Check cable and hose routing clearances.
- Make sure there is clearance for mounting bolts and washers. Check the inside area of the transom for obstructions before drilling holes.

Water Flow

Inspect the hull area directly in front of the mounting location.

- Boat-mounted equipment should not create turbulence in the water flow directly in front of the outboard's gearcase. Turbulence or disruptions in the water flow directly in front of the gearcase will affect engine cooling and propeller performance.
- Avoid locating outboard centerlines within 3 in. (76 mm) of bottom strakes on dual-outboard installations.

Transom Brackets

When mounting an outboard on a transom bracket:

- Refer to the manufacturer's recommendations for maximum weight and horsepower.
- The transom bracket must provide a rigid, one-piece mounting assembly—either a solid surface, or surfaces adequately connected to prevent flexing or twisting.

IMPORTANT: Damage caused by use of an inadequate transom bracket or unstable mounting surface will not be covered by warranty.

Whenever possible, use mounting hardware supplied with the outboard to install transom bracket on the transom. Tighten all fasteners to specified torque values.

NOTICE **To prevent damage to outboard, check installation frequently for:**

- **Loose mounting bolts and nuts**
- **Loose tilt tube or steering cable nuts**
- **Elongated mounting holes**
- **Bent or deformed washers**

Replace any hardware that fails to maintain torque specifications.

Mounting Hardware

⚠ WARNING

Use all mounting hardware supplied with the outboard to help ensure a secure installation. Substituting inferior hardware can result in loss of control.

Outboard mounting hardware must meet minimum specifications for material and strength:

- **Material:** Stainless steel; Group 1,2,3 per ASTM F593 OR Grade A2 per ISO 3506-1.
- **Strength:** Minimum proof load.

Outboard mounting bolts, backing plates, washers, and nuts are supplied with the outboard. If alternate bolt lengths or replacement parts are required, use only *Evinrude/Johnson Genuine Parts.*

IMPORTANT: Standard screws offered by local merchants may not provide the high strength required for outboard installations.

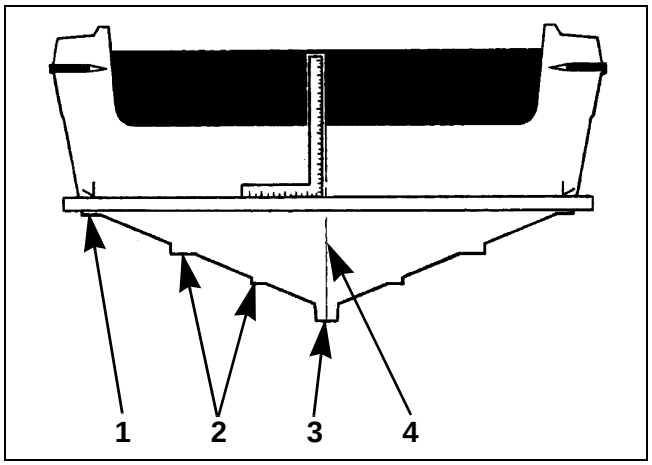
TRANSOM MEASURING AND DRILLING

Hull Centerline

Use the chines of the boat as reference points to locate the centerline of the boat transom.

Use a straightedge to draw a line connecting the port and starboard chines.

Use a framing square to accurately place a vertical line on the transom. The centerline of the hull should be in line with the keel, and perpendicular to the midpoint of the line connecting the chines.



1. *Chine*
2. *Strake*
3. *Keel*
4. *Hull centerline*

DR5568

Transom Height

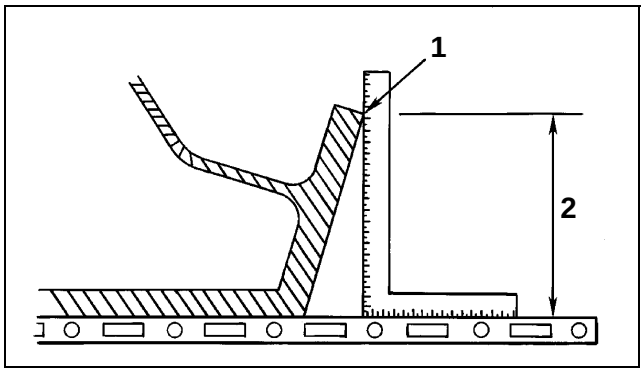
Make sure the transom height matches the length of the outboard to be installed.

- A 19 to 21 in. (48.3 to 53.3 mm) transom height uses a 20 in. (50.8 mm) shaft outboard.
- The shaft length of the outboard being installed should come close to matching the transom height of the boat.
- Refer to **SPECIFICATIONS** in outboard Operator's Guide for transom height.

Determine transom height by measuring from the top edge of the transom, along the centerline.

Use a straightedge as a reference to extend the bottom of the boat.

Position the straightedge along centerline. The distance from the top edge of the straightedge to the top edge of the transom is the actual transom height.



1. *Top edge of transom*
2. *Actual transom height*

DR5541

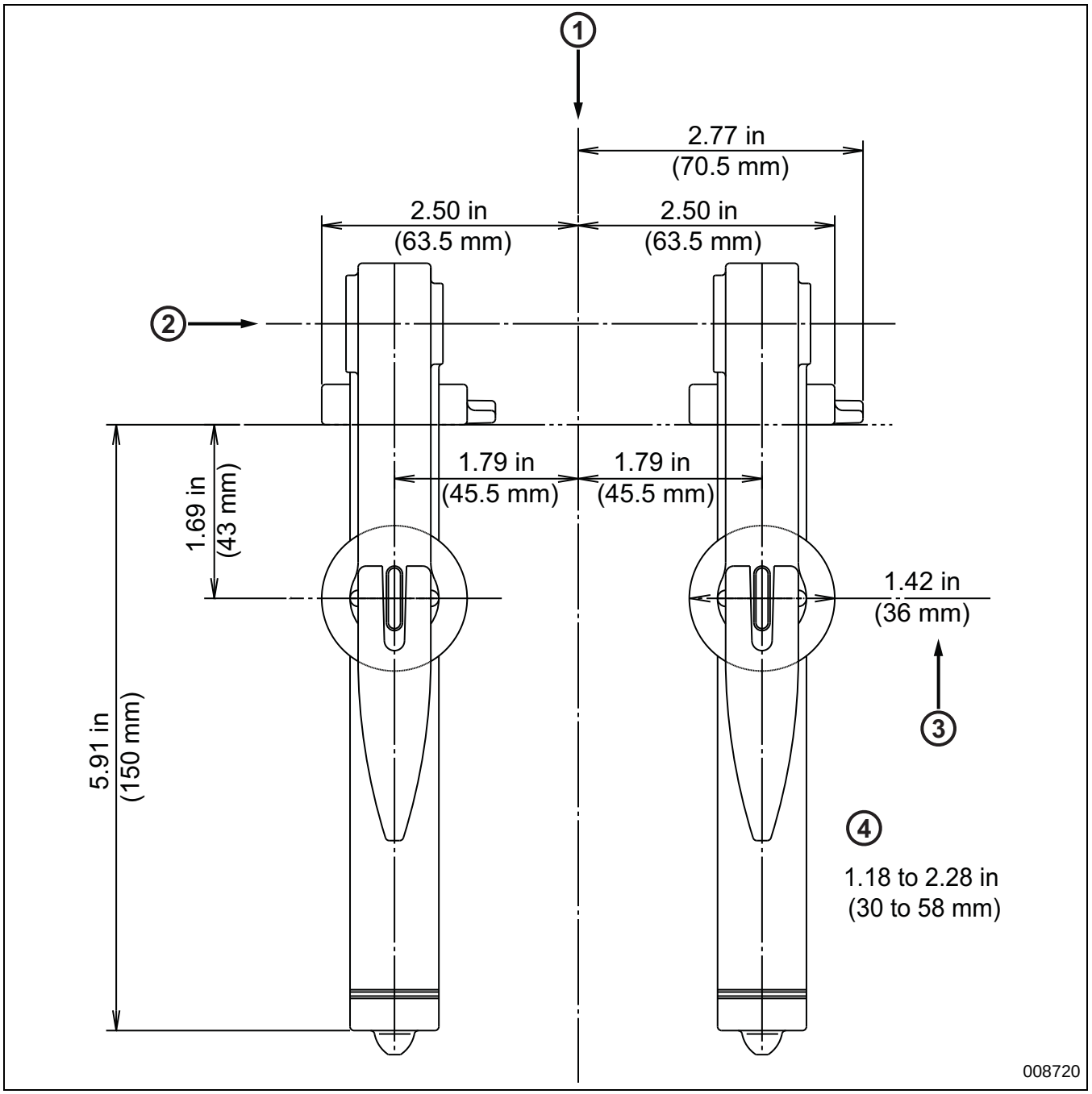
With the outboard installed on the boat:

- Generally the anti-ventilation plate of the gearcase should align with the bottom of the hull.
- The anti-ventilation plate should NOT extend more than 2 in. (5 cm) BELOW the bottom of the hull.

Clamp, Drilling and Hardware Diagrams

3.5 HP MODELS

IMPORTANT: This is not a template.



1. Center of Transom

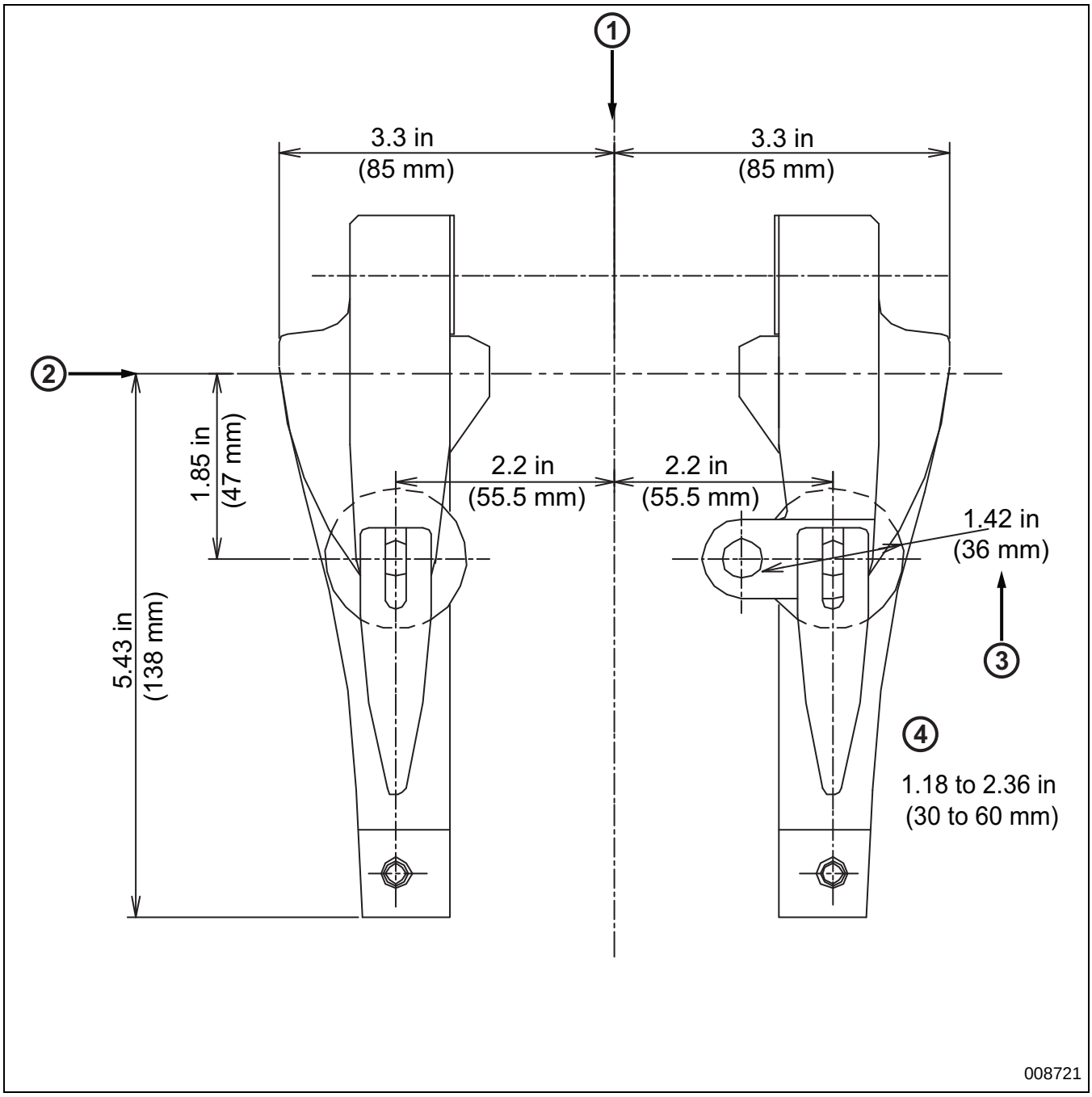
2. Top of Transom

3. Clamp Diameter

4. Allowable Transom Thickness

4, 6 HP MODELS

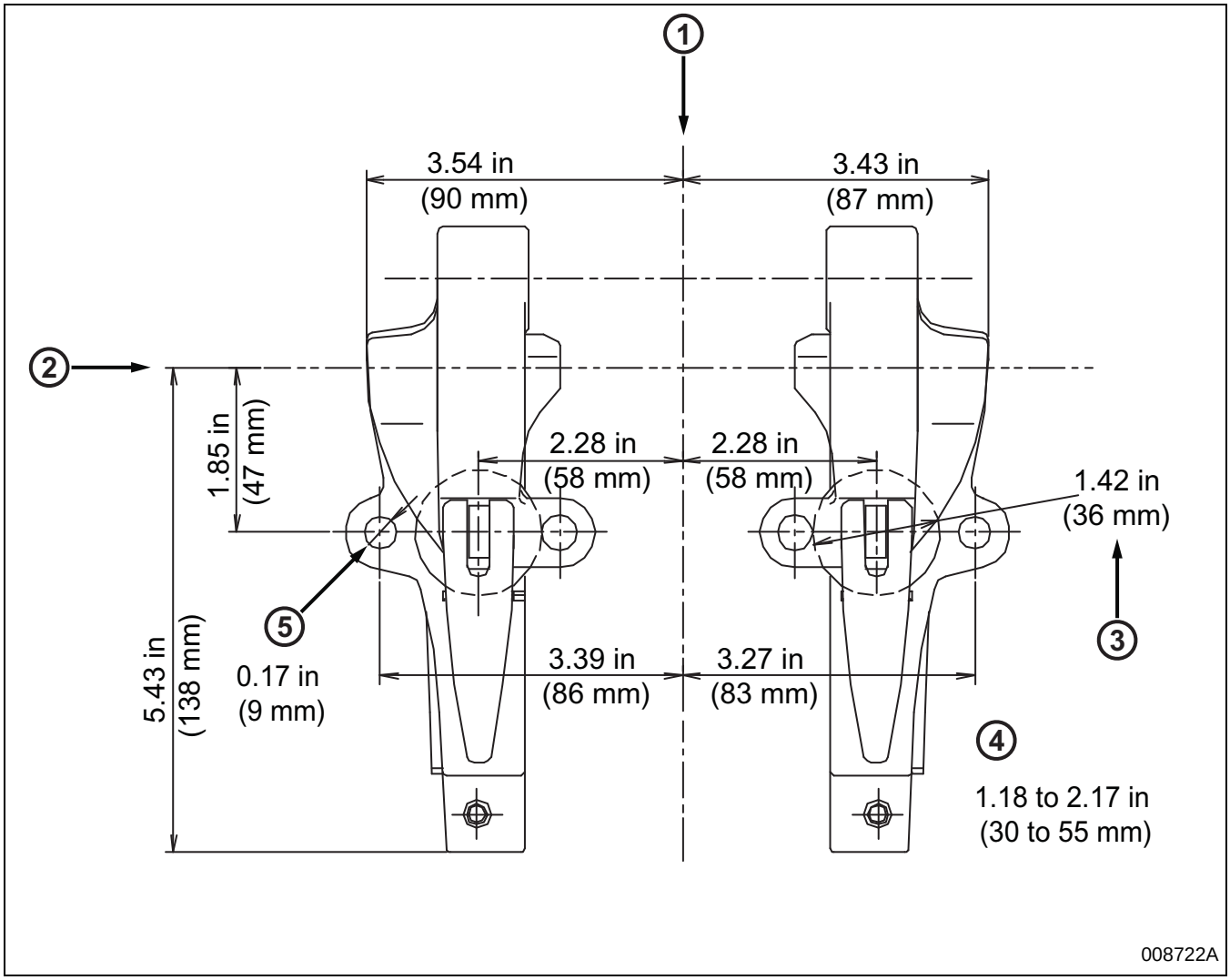
IMPORTANT: This is not a template.



1. Center of Transom
2. Top of Transom
3. Clamp Diameter
4. Allowable Transom Thickness

9.8 HP, MANUAL TILT R MODELS

IMPORTANT: This is not a template.



1. Center of Transom

2. Top of Transom

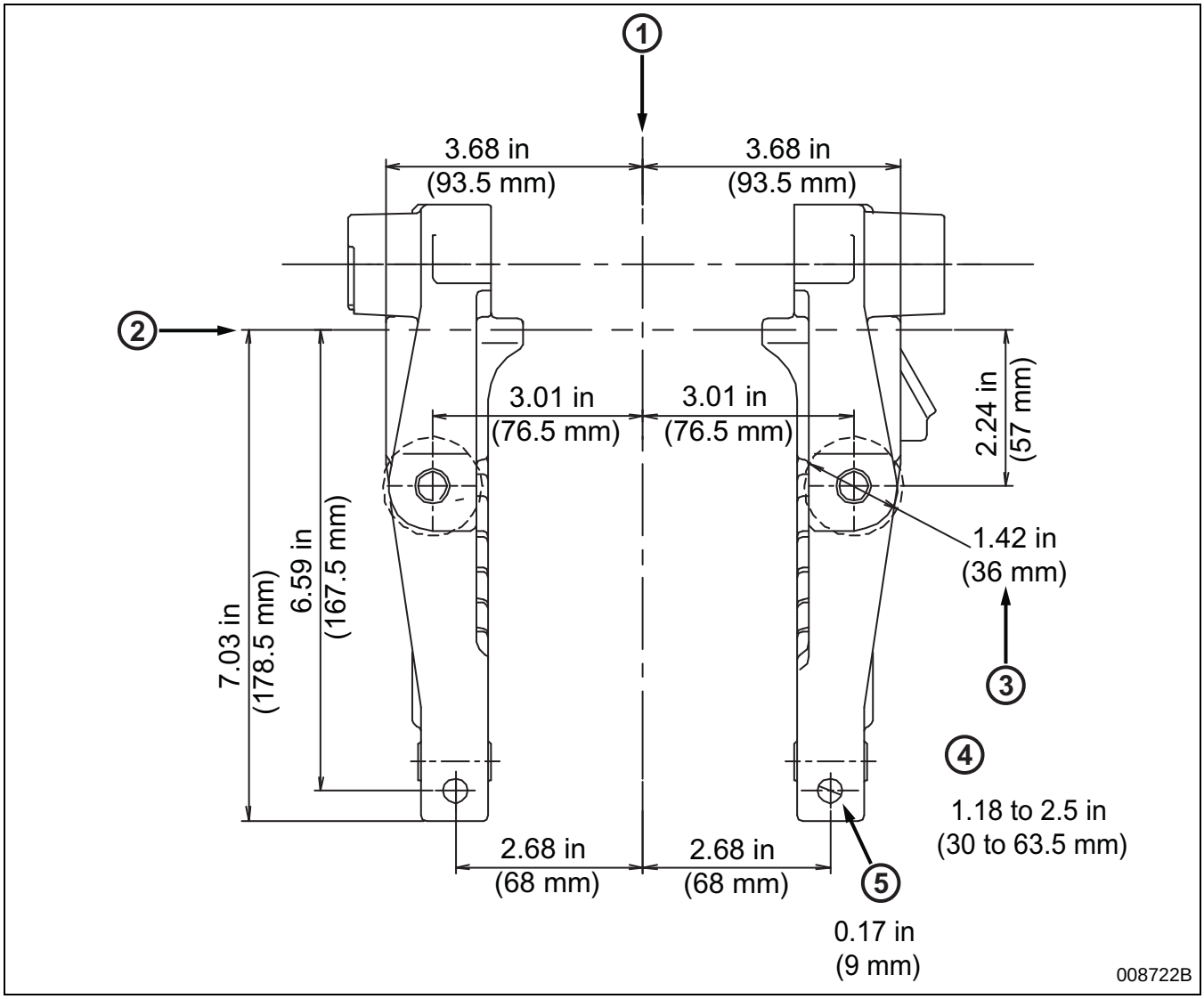
3. Clamp Diameter

4. Allowable Transom Thickness

5. Mounting Bolt Diameter

9.8 HP, MANUAL TILT TE MODELS

IMPORTANT: This is not a template.



1. Center of Transom

2. Top of Transom

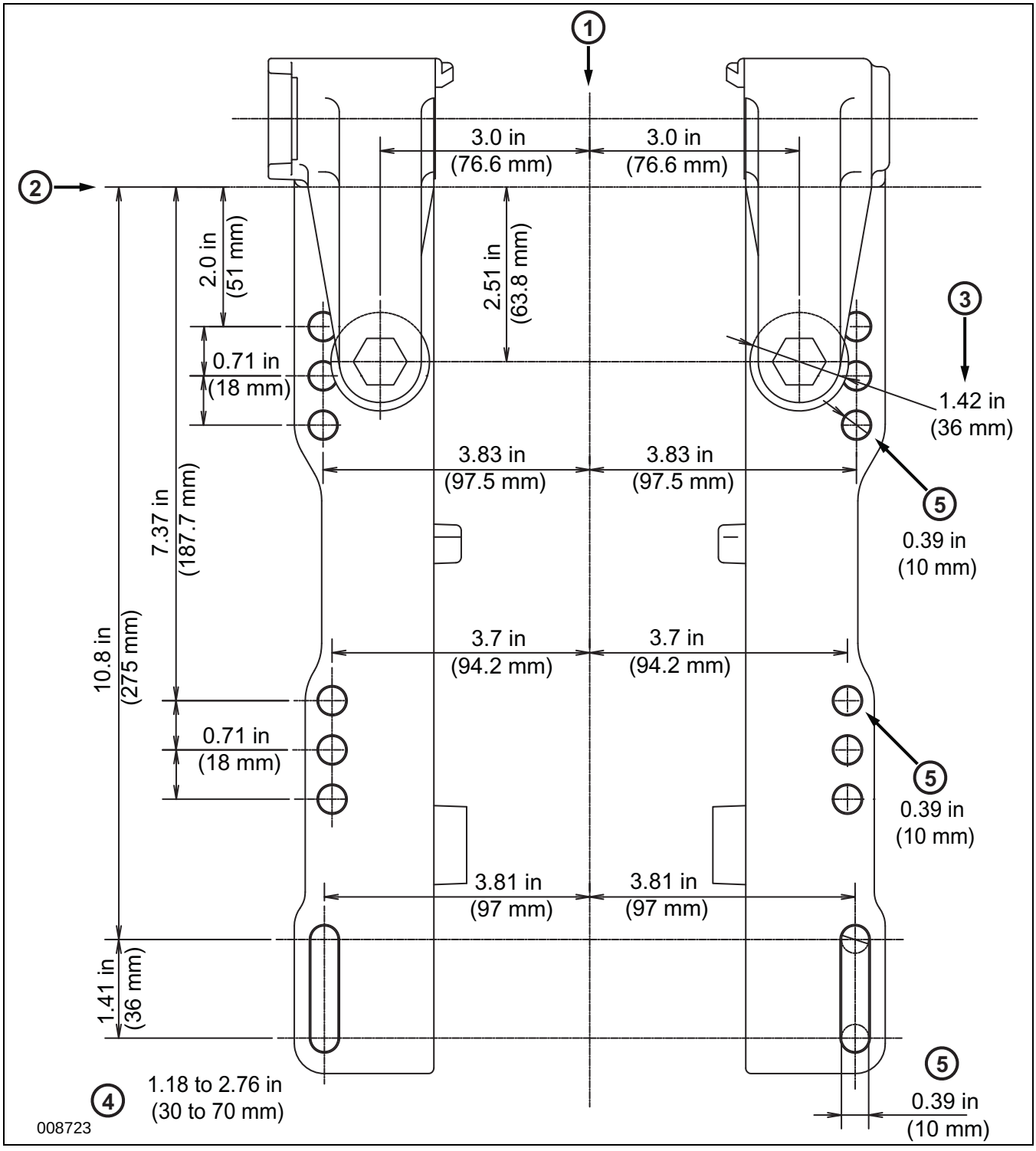
3. Clamp Diameter

4. Allowable Transom Thickness

5. Mounting Bolt Diameter

9.8, 15 HP, POWER TILT MODELS

IMPORTANT: This is not a template.



1. Center of Transom

2. Top of Transom

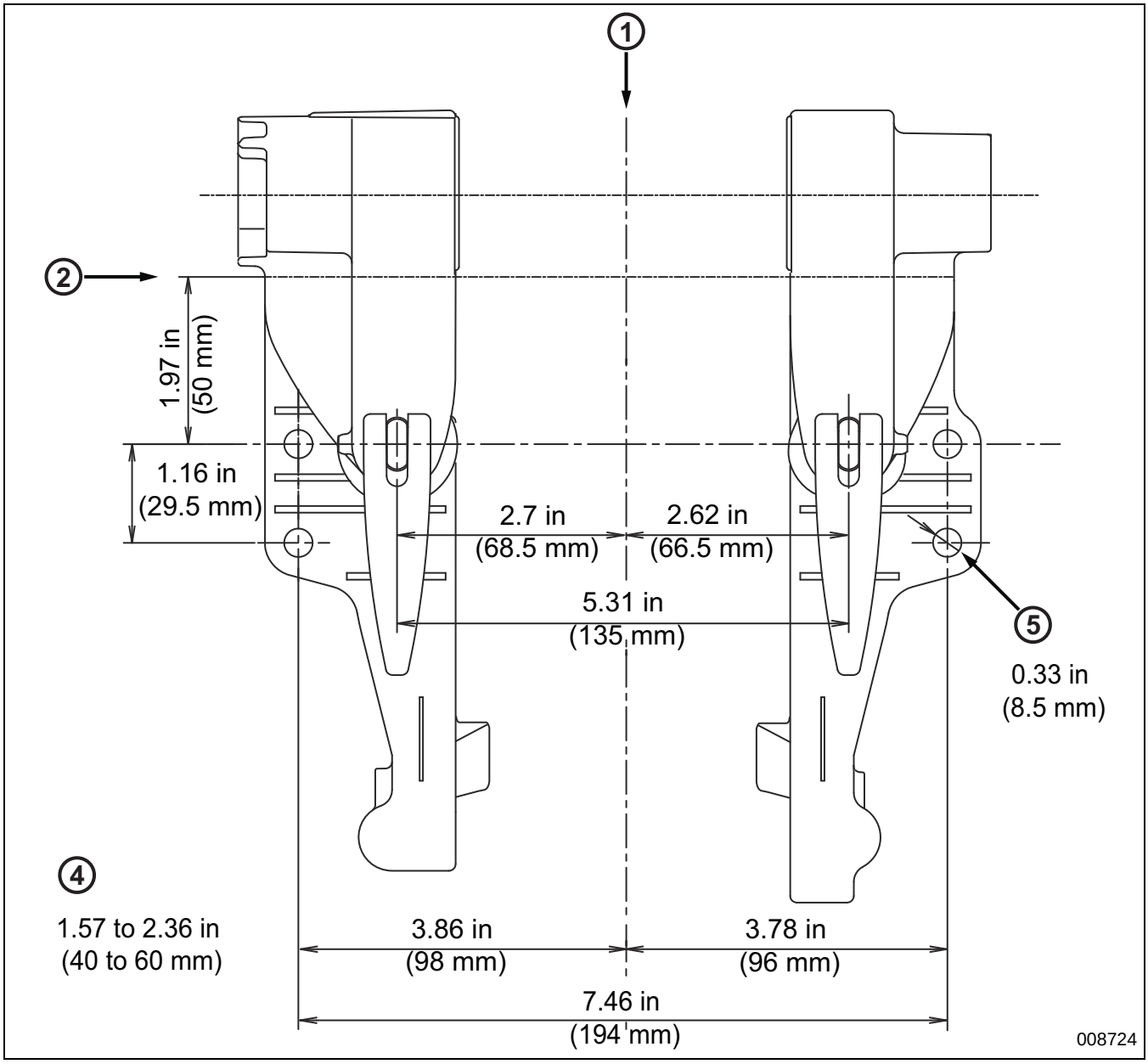
3. Clamp Diameter

4. Allowable Transom Thickness

5. Mounting Bolt Diameter

15 HP, MANUAL TILT MODELS

IMPORTANT: This is not a template.



1. Center of Transom

2. Top of Transom

3. Clamp Diameter

4. Allowable Transom Thickness

5. Mounting Bolt Diameter

LIFTING THE OUTBOARD

⚠ WARNING

To avoid personal injury, make sure the lifting capacity of the hoist is at least twice the weight of the outboard.

DO NOT allow the lift hook or chain from the hoist to come in contact with any part of the engine during lifting.

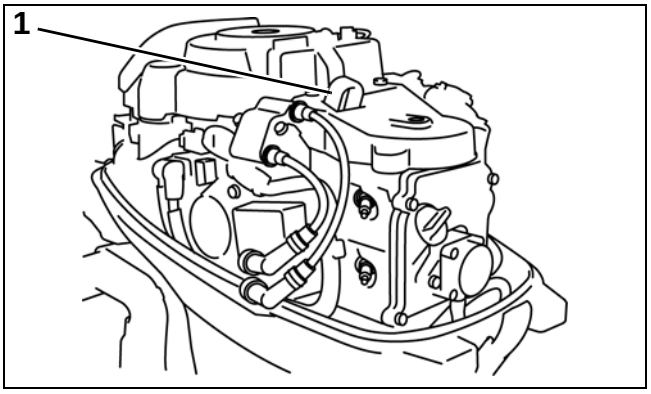
Open the shipping carton. Remove packing materials.

15 HP MODELS

Remove the upper engine cover.

Fasten appropriate chain hook or snap hook to the integrated lifting eye.

Carefully hoist outboard with chain.



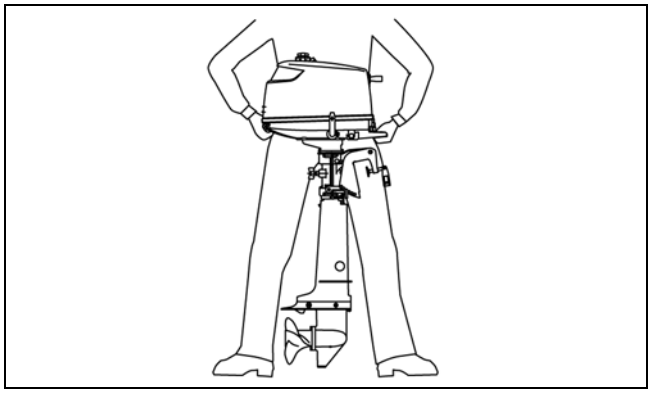
1. Integrated lifting eye 008725

⚠ WARNING

If the chain hooks or snap hooks are too large, the integrated lifting eye could break, causing the outboard could drop suddenly and resulting in damage to the outboard or personal injury.

3.5–9.8 HP MODELS

Carefully lift the outboard from the shipping carton.



008726

⚠ WARNING

Avoid personal injury. Use proper lifting techniques, or obtain assistance when lifting or carrying the engine.

STEERING SYSTEMS

Mechanical Cables

All *Evinrude* outboards equipped with tilt tubes are compatible with mechanical steering systems that meet ABYC Standard P-17. Single-cable mechanical steering systems can be used on single or dual-outboard installations if an ABYC-approved steering link is used.

Extend the steering cable and lubricate the inner core before installation.

ABYC-approved mechanical steering cable. 5873

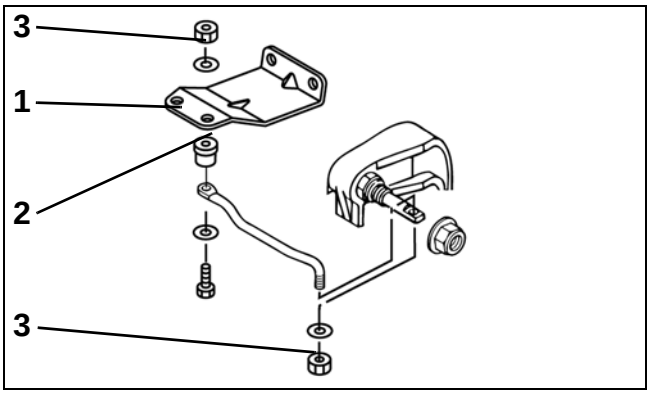
IMPORTANT: Install steering cable through tilt tube **before** mounting outboard on transom. Tighten nut securely.

Drag Links

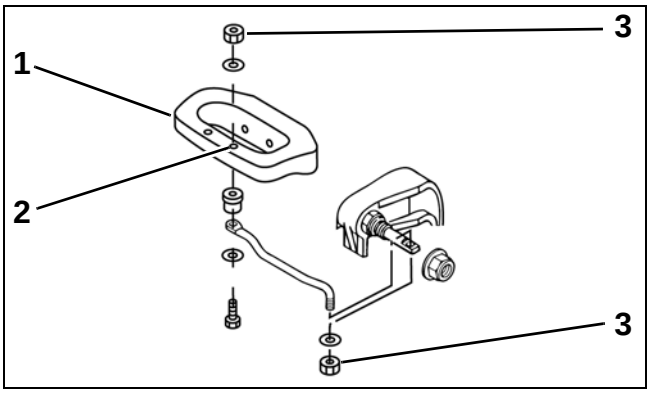
Use the correct drag link to allow full steering travel:

Model	Drag Link
9.8 HP	P/N 5040355
15 HP	P/N 5040800

Install steering cable wiper nut on tilt tube. Connect the drag link to the steering bracket with the provided hardware as shown. Tighten drag link nuts to 20 ft. lbs. (27 N·m).



9.8 HP Models 008727
1. *Steering bracket*
2. *Drag link connection*
3. *Drag link nuts*



15 HP Models 008728
1. *Steering bracket*
2. *Drag link connection*
3. *Drag link nuts*

OUTBOARD MOUNTING

IMPORTANT: Some rigging components, such as steering cables, must be fitted to the outboard before the outboard is mounted to the transom. Determine what equipment will be installed before mounting.

Mounting Height

Boat performance depends on outboard mounting height.

Generally, the anti-ventilation plate of the gearcase should align with the bottom of the hull. Conventional V-hulls often perform well with the anti-ventilation plate approximately 1 in. (25 cm) above the bottom of the hull.

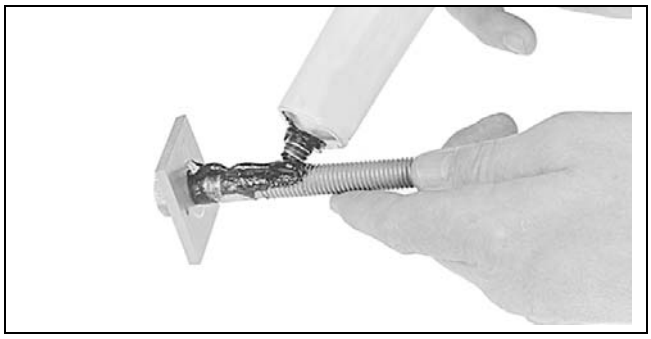
Test outboard and boat performance at different heights until the best performance is achieved.

NOTICE **Be sure that outboard water pressure is not adversely affected by the mounting height of the outboard.**

Mounting Bolt Installation

IMPORTANT: Use a marine sealant rated for above or below waterline use. RTV silicone is not approved for below waterline use. Polyurethane sealants are not easily removed and may damage outboard or boat mounting surfaces.

Apply marine sealer under hex heads of bolts, on the mounting plates, and to the bolt shanks.



0078A

Position hex head of bolt with flats toward holes in the mounting plates. Install retainer over hex head of the bolt and secure it with screws provided.

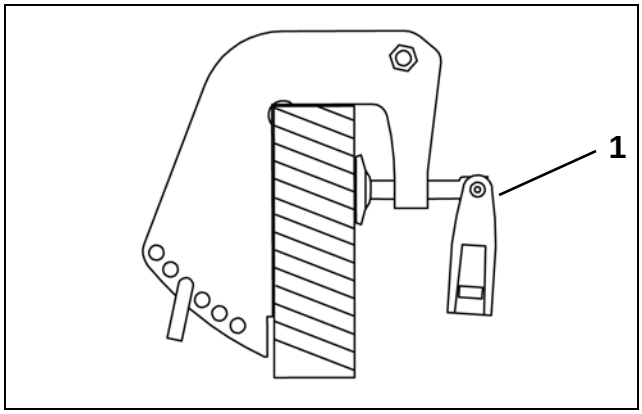
Install all washers and nuts. Tighten all fasteners to specified torque value.

⚠ WARNING

If either side of the transom deforms or cracks when the bolts are tightened to their recommended torque, the transom construction may not be adequate or may be deteriorated. Structural failure of the transom could result in loss of boat control and injury to the occupants.

3.5–6 HP, MANUAL TILT MODELS

Center the engine on the boat's transom (or mounting bracket) and tighten the clamp screws by hand, NOT with tools.



1. Clamp screw 008729

9.8–15 HP, MANUAL TILT MODELS

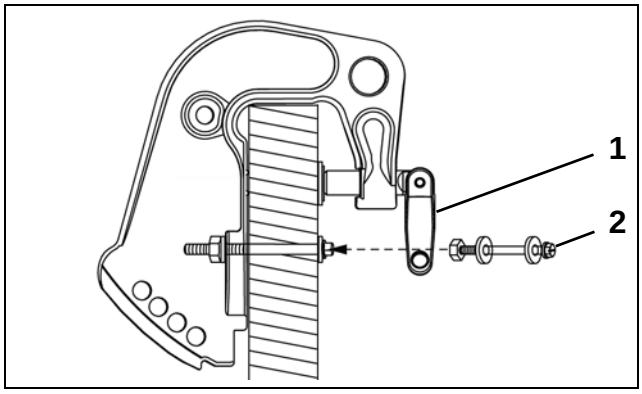
Center the engine on the boat's transom. Tighten the clamp screws by hand, NOT with tools.

Bolt the engine to the boat's transom using the mounting hardware provided:

After positioning the engine, use the stern brackets as a template for location and size of holes to drill in the transom.

Drill two holes of the proper size through the transom. Be sure to drill holes at right angles to the transom.

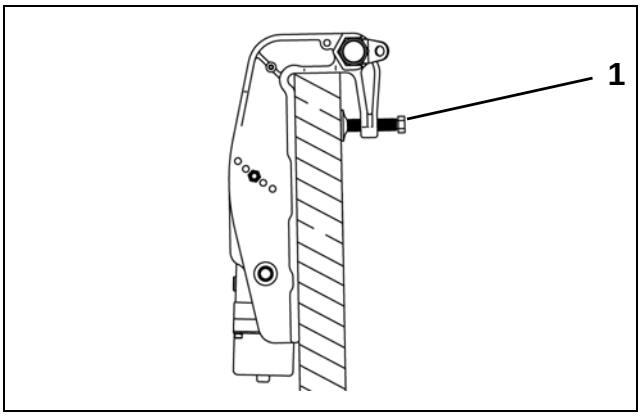
Install the mounting bolts through the stern brackets and transom. Install round backing plates and locknuts onto bolts and tighten to a torque of 9 ft.lbs. (13 N·m).



1. Clamp screw 008730
2. Mounting hardware

9.8–15 HP POWER TILT MODELS

Center the engine on the boat's transom. Tighten the clamp screws.



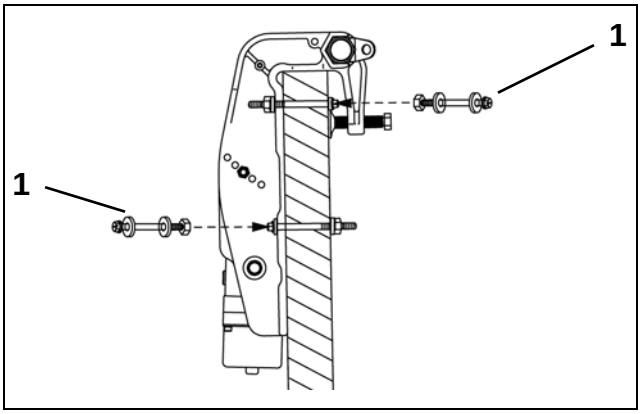
1. Clamp screw 008731

Bolt the engine to the boat's transom using the mounting hardware provided:

After positioning the engine, use the stern brackets as a template for location and size of holes to drill in the transom.

Drill four holes of the proper size through the transom. Be sure to drill holes at right angles to the transom.

Install the mounting bolts through the stern brackets and transom. Install round backing plates and locknuts onto bolts and tighten to a torque of 20 ft.lbs. (27 N·m).



1. Mounting hardware 008732

NOTES

Technician's Notes

Related Documents

Bulletins	
Instruction Sheets	
Other	

OUTBOARD RIGGING

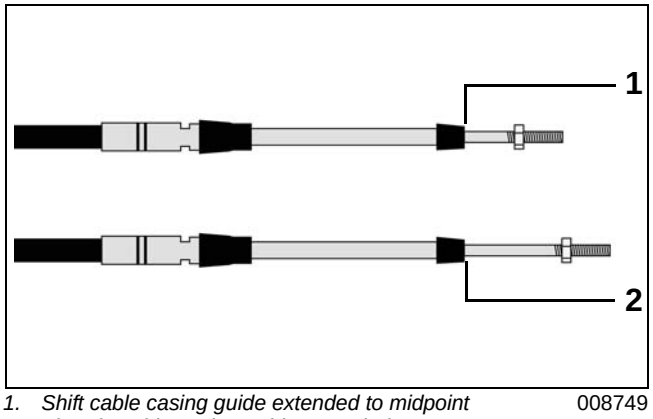
COMMON PRACTICES – ALL MODELS

Control Cable Identification

IMPORTANT: Identify control cable function before rigging outboard.

Identify each control cable:

- Put the control handle into NEUTRAL position. The throttle cable casing guide will extend completely and the shift cable casing guide will go to the midpoint of its travel.



1. Shift cable casing guide extended to midpoint 008749
2. Throttle cable casing guide extended

EVINRUDE 4–STROKE 9.8 HP MODELS

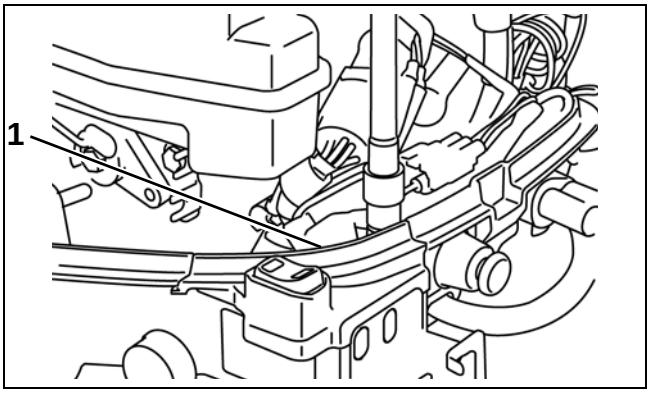
Cable, Hose, and Wire Routing

⚠ CAUTION

To prevent accidental starting while servicing, disconnect the battery cables at the battery. Twist and remove all spark plug leads.

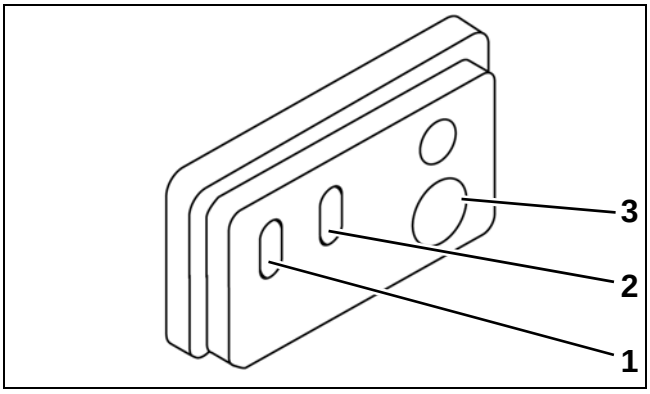
Refer to **Control Cable Identification** on p. 33.

Remove the screw from the cable entry grommet cover and remove the cover.



1. Cable entry grommet cover 008691

Install control cables and electrical harness through the cable entry grommet as shown:



1. Shift cable 008692
2. Throttle cable
3. Electrical harness

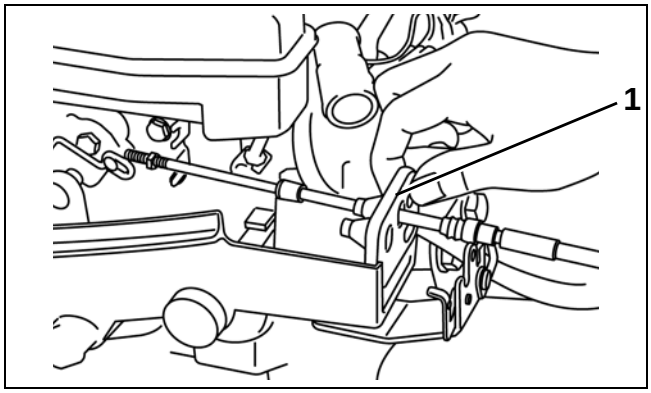
NOTICE **After installation, make sure there is enough clearance for all cables to avoid binding or chafing through all engine steering and tilting angles.**

Control Cable Installation

Refer to **Control Cable Identification** on p. 33.

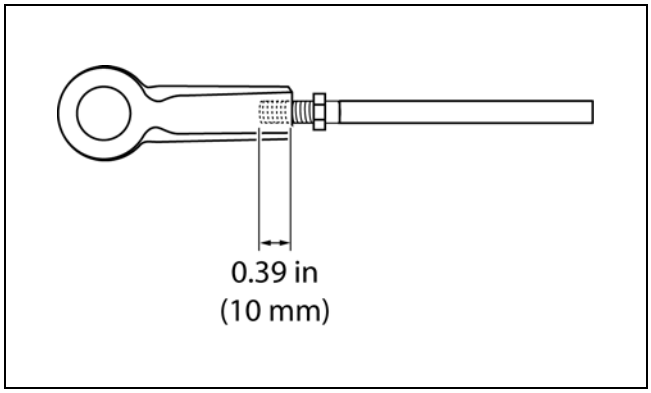
Make sure the remote control is in NEUTRAL, and throttle is in the IDLE position.

Install the shift and throttle cables through the cable entry grommet.



1. Cable entry grommet 008693

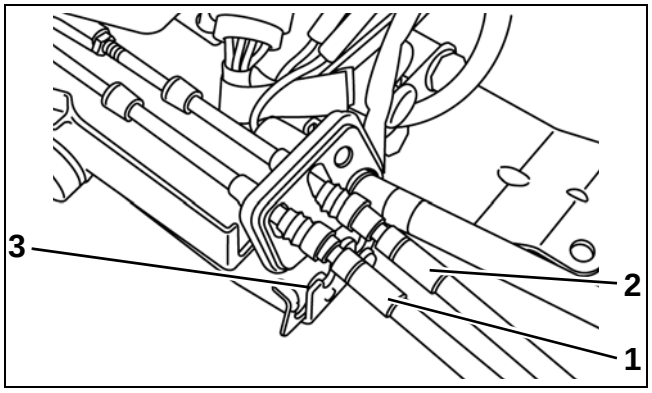
Install cable connectors onto shift and throttle cables. Make sure connectors are threaded onto control cables at least 0.39 in (10 mm).



008694

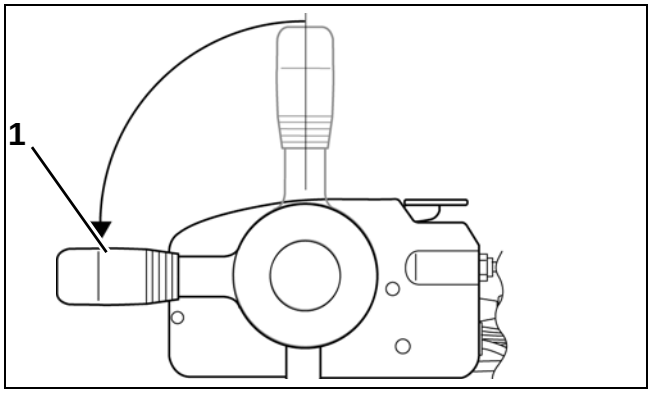
Install the electrical harness through the cable entry grommet.

Install the shift and throttle cables into the control cable bracket.



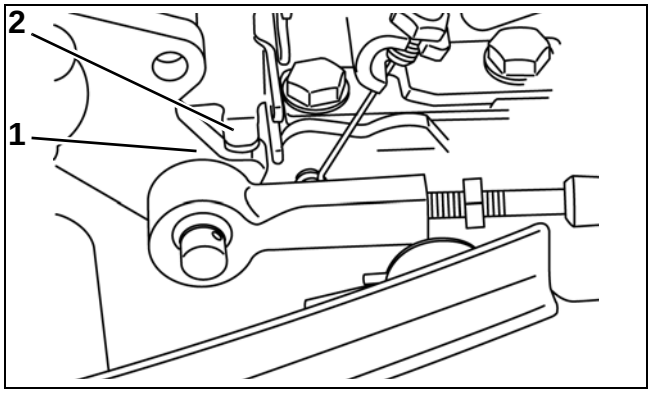
1. Shift cable 008695
2. Throttle cable
3. Control cable bracket

Move the remote control lever to the wide open throttle position.



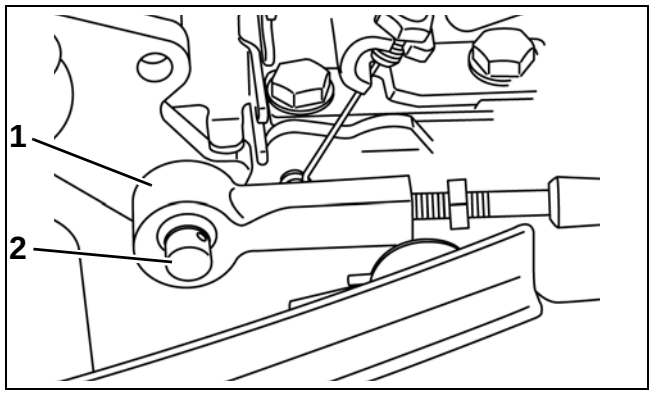
1. Wide open throttle position 008696

Move the throttle lever against the wide open throttle stop.



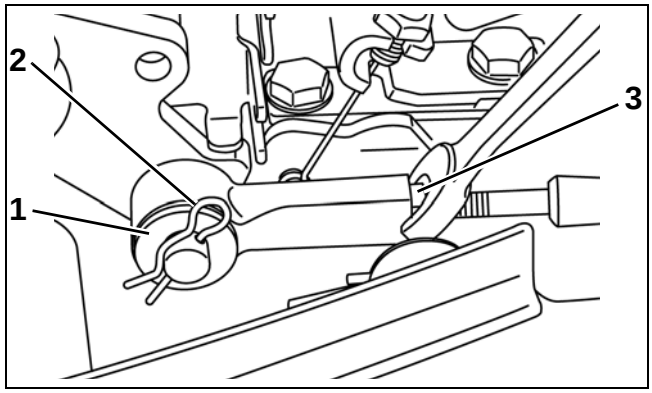
1. Throttle lever 008697
2. Wide open throttle stop

Turn control cable connector to align with the throttle lever pin. Install control cable connector on the throttle lever pin.



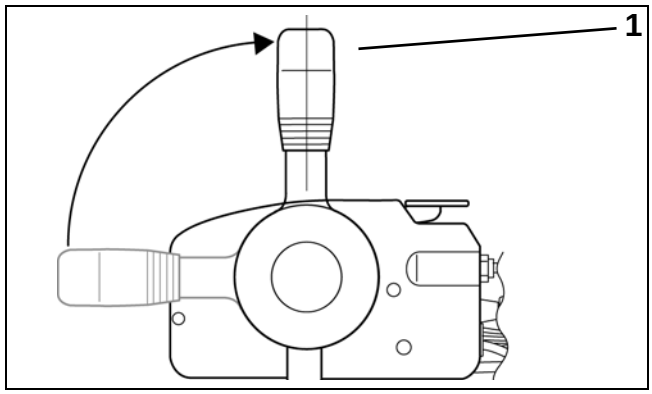
1. Control cable connector 008697
2. Throttle lever pin

Secure the control cable connector with a washer and clip. Tighten the control cable connector lock nut securely.



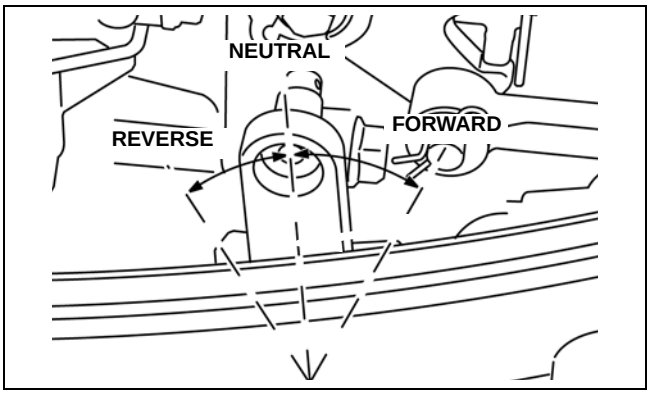
1. Washer 008698
2. Clip
3. Control cable connector lock nut

Move the remote control lever to the NEUTRAL position.



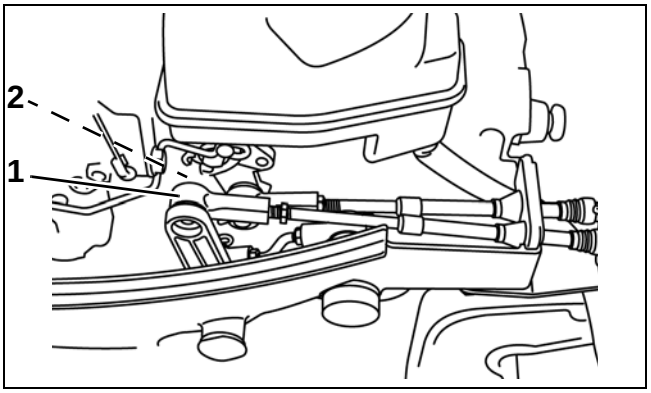
1. NEUTRAL position 008699

Make sure shift lever is in the NEUTRAL position.



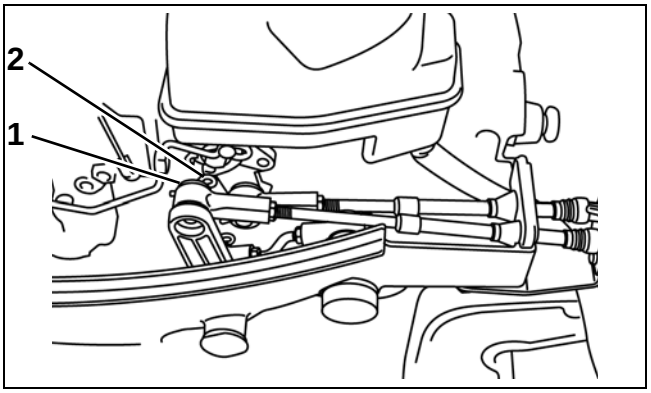
Neutral Position 008700

Turn the control cable connector to align with the shift lever pin. Install the control cable connector on the shift lever pin.



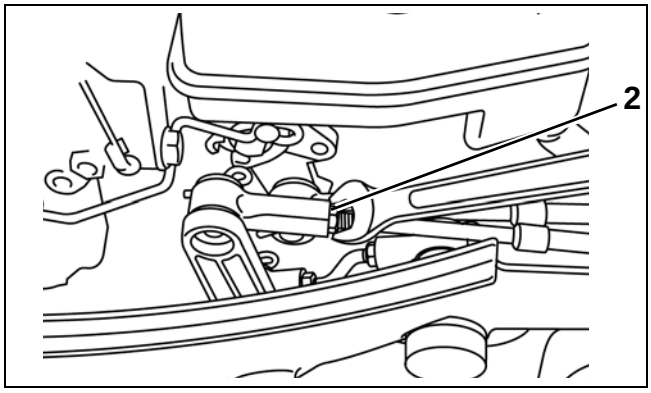
1. Control cable connector 008701
2. Shift lever pin

Secure the control cable connector with a washer and clip.



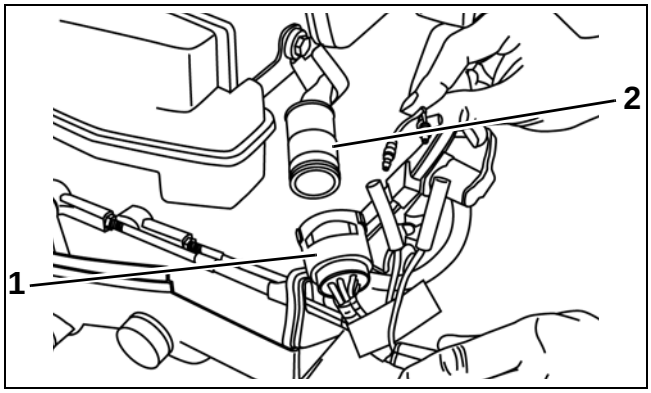
1. Washer 008702
2. Clip

Tighten the control cable connector lock nut securely.



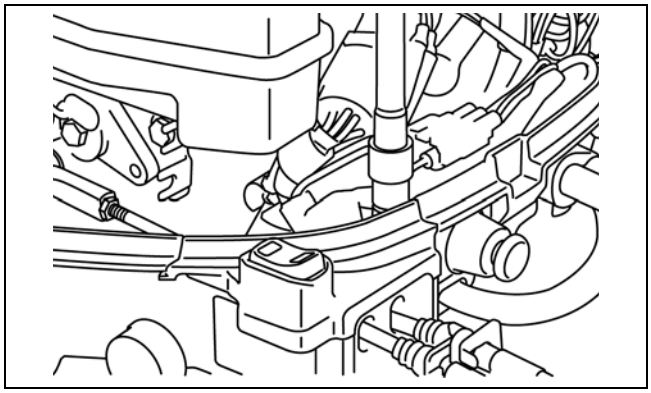
1. Control cable connector lock nut 008703

Connect the electrical harness to engine connector.



1. Eletrical harness 008704
2. Engine connector

Position the cable entry grommet. Install the cable entry grommet cover and secure with screw.



008705

EVINRUDE 4–STROKE 15 HP MODELS

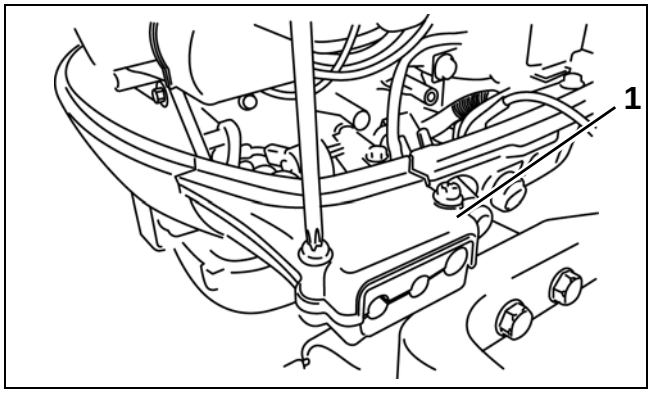
Cable, Hose, and Wire Routing

⚠ CAUTION

To prevent accidental starting while servicing, disconnect the battery cables at the battery. Twist and remove all spark plug leads.

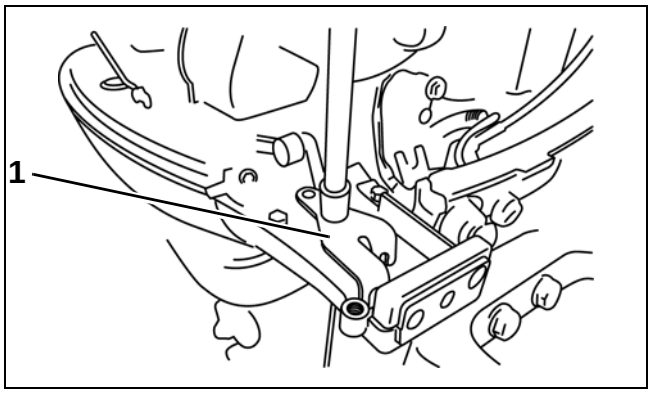
Refer to **Control Cable Identification** on p. 33.

Remove two screws from the cable entry grommet cover and remove the cover.



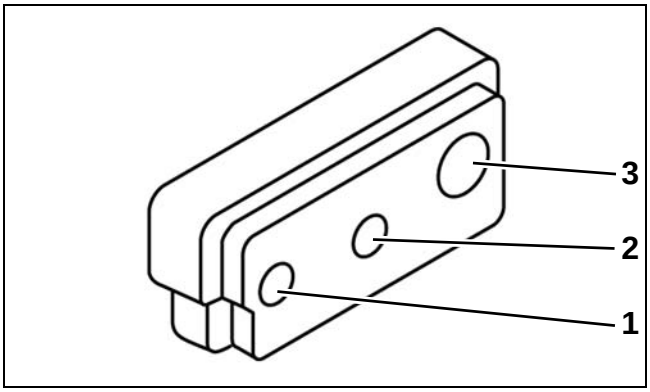
1. Cable entry grommet cover 008706

Remove the control cable retainer.



1. Control cable retainer 008707

Install control cables and electrical harness through the cable entry grommet as shown:



1. Throttle cable 008708
2. Shift cable
3. Electrical harness

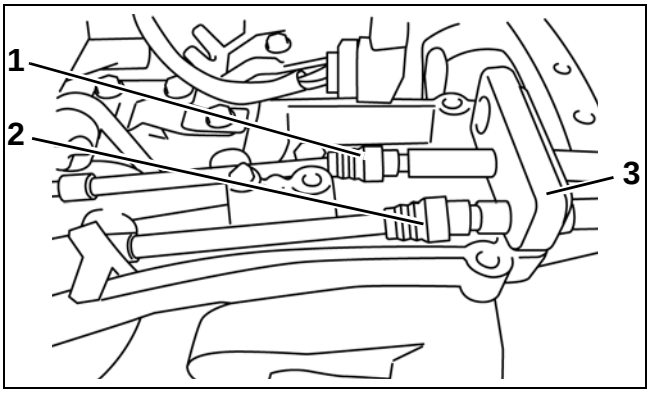
NOTICE **After installation, make sure there is enough clearance for all cables to avoid binding or chafing through all engine steering and tilting angles.**

Control Cable Installation

Refer to **Control Cable Identification** on p. 33.

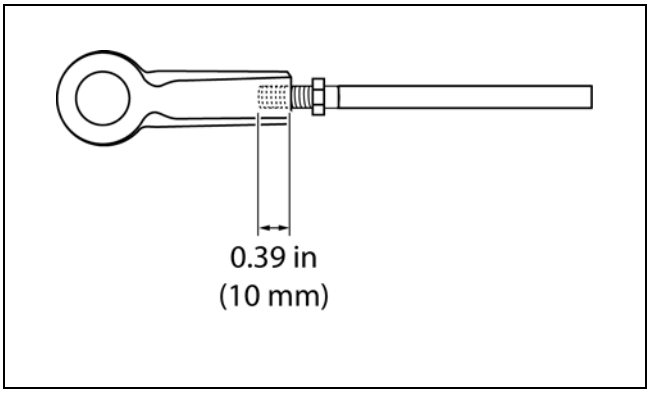
Make sure the remote control is in NEUTRAL, and throttle is in the IDLE position.

Install the shift and throttle cables through the cable entry grommet.



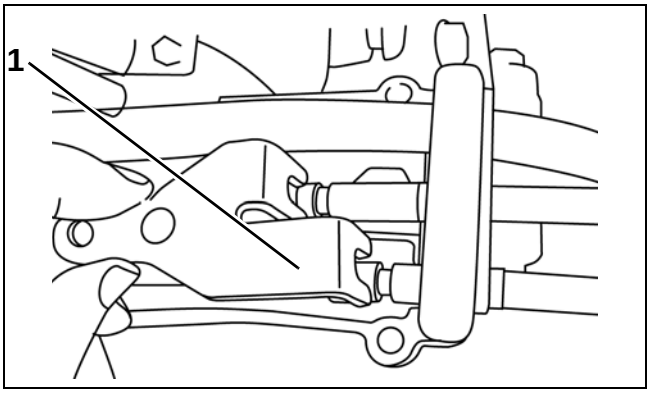
1. Shift cable 008709
2. Throttle cable
3. Cable entry grommet

Install the cable connectors onto the shift and throttle cables. Make sure connectors are threaded onto control cables at least 0.39 in (10 mm).



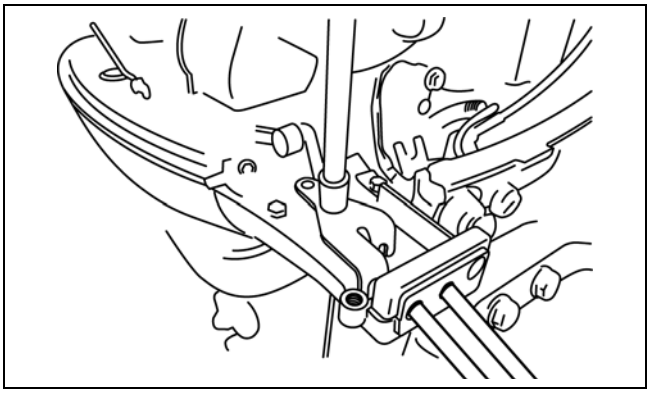
008694

Install the control cable retainer over the shift and throttle cable.



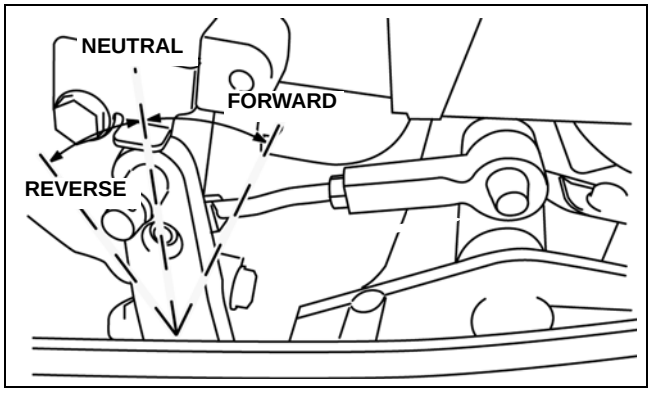
1. Control cable retainer 008710

Install the screw into the control cable retainer and tighten securely.



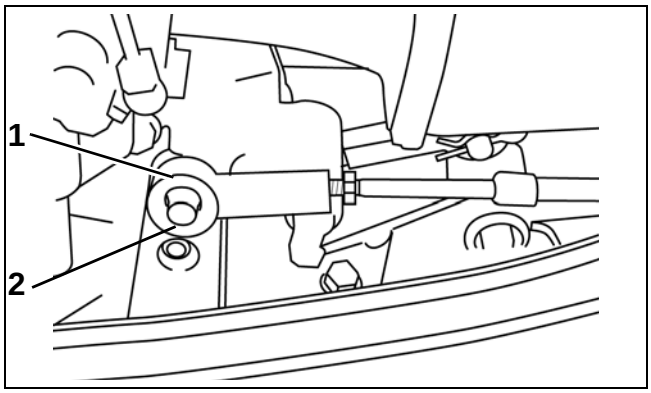
008711

Make sure the shift lever is in the NEUTRAL position.



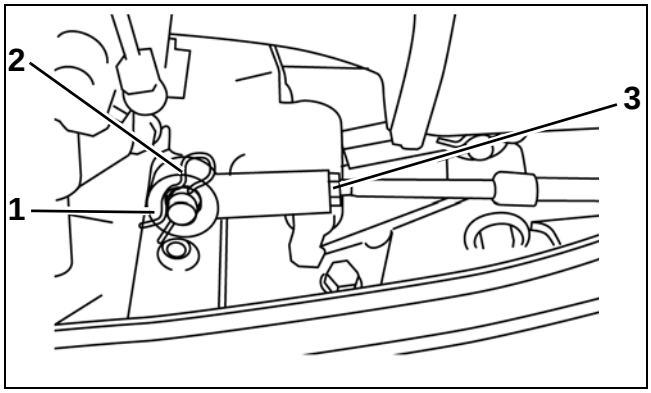
Neutral Position 008712

Turn the control cable connector to align with the shift lever pin. Install the control cable connector on the shift lever pin.



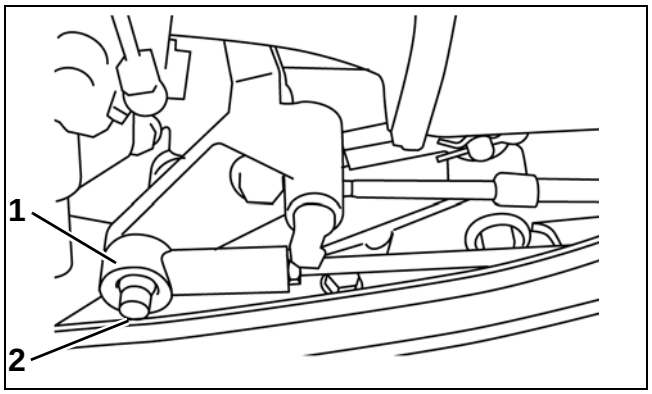
1. Control cable connector 008713
2. Shift lever pin

Secure the control cable connector with a washer and clip. Tighten the control cable connector lock nut securely.



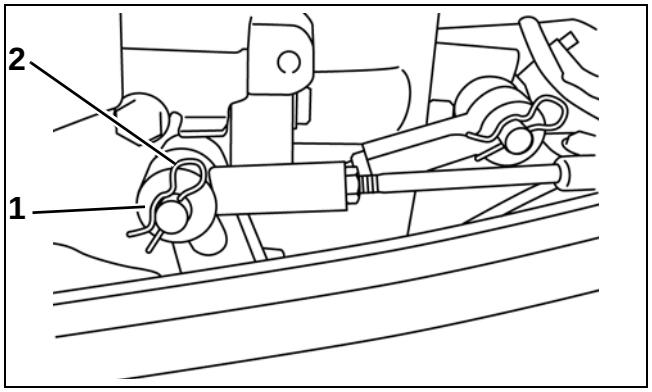
1. Washer 008714
2. Clip
3. Control cable connector lock nut

Turn the control cable connector to align with the throttle lever pin. Install the control cable connector on the throttle lever pin.



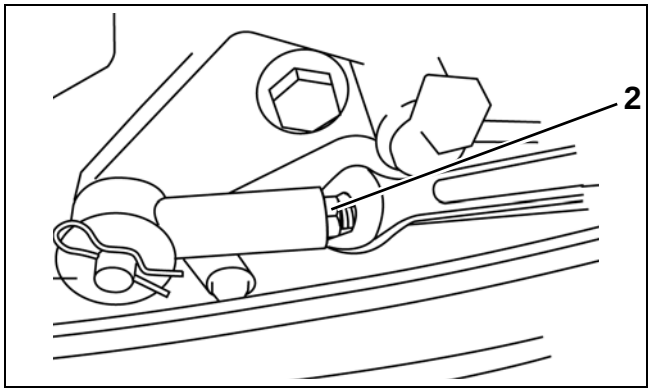
1. Control cable connector 008715
2. Throttle lever pin

Secure the control cable connector with a washer and clip.



1. Washer 008716
2. Clip

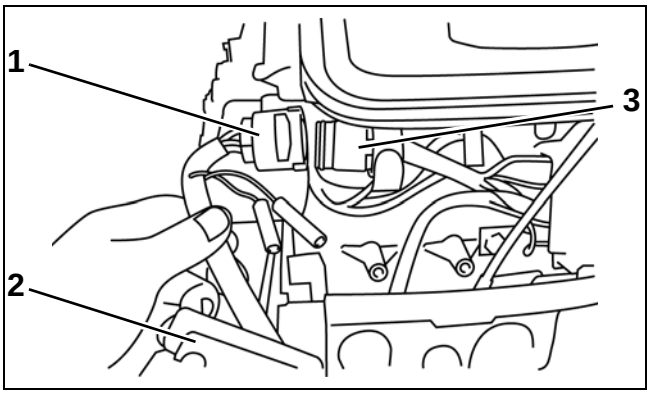
Tighten the control cable connector lock nut securely.



1. Control cable connector lock nut 008717

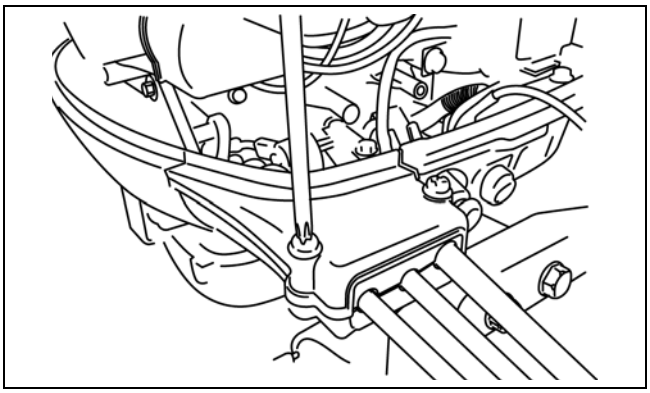
Install the electrical harness through the cable entry grommet.

Connect electrical harness to engine connector.



1. Electrical harness 008718
2. Cable entry grommet
3. Engine connector

Position the cable entry grommet. Install the cable entry grommet cover and secure with two screws.



008719

NOTES

Technician's Notes

Related Documents

Bulletins	
Instruction Sheets	
Other	

FUEL AND OIL

FUEL REQUIREMENTS

⚠ WARNING

Gasoline is extremely flammable and highly explosive under certain conditions. Improper handling of fuel could result in property damage, serious injury or death.

Always turn off the outboard before fueling.

Never permit anyone other than an adult to refill the fuel tank.

Do not fill the fuel tank all the way to the top or fuel may overflow when it expands due to heating by the sun.

Remove portable fuel tanks from the boat before fueling.

Always wipe off any fuel spillage.

Do not smoke, allow open flames or sparks, or use electrical devices such as cellular phones in the vicinity of a fuel leak or while fueling.

Minimum Octane

Evinrude/Johnson outboards are certified to operate on unleaded automotive gasoline with an octane rating equal to or higher than:

- 87 (R+M)/2 AKI, or
- 90 RON

Use unleaded gasoline that contains methyl tertiary butyl ether (MTBE) **ONLY** if the MTBE content does not exceed 15% by volume.

Use alcohol-extended fuels **ONLY** if the alcohol content does not exceed:

- 10% ethanol by volume
- 5% methanol with 5% cosolvents by volume

When using alcohol-extended fuels, be aware of the following:

- The boat's fuel system may have different requirements regarding the use of alcohol fuels. Refer to the boat's owner guide.
- Alcohol attracts and holds moisture that can cause corrosion of metallic parts in the fuel system.
- Alcohol blended fuel can cause engine performance problems.
- All parts of the fuel system should be inspected frequently and replaced if signs of deterioration or fuel leakage are found. Inspect at least annually.

IMPORTANT: Always use fresh gasoline. Gasoline will oxidize, resulting in loss of octane and volatile compounds, as well as the production of gum and varnish deposits which can damage the outboard.

Additives

IMPORTANT: The only fuel additives approved for use in *Evinrude* outboards are *2+4*® fuel conditioner and *Evinrude/Johnson* Fuel System Cleaner. **Use of other fuel additives can result in poor performance or engine damage.**

Evinrude/Johnson 2+4 **Fuel Conditioner** will help prevent gum and varnish deposits from forming in fuel system components and will remove moisture from the fuel system. It can be used continuously and should be used during any period when the outboard is not being operated on a regular basis. Its use will reduce spark plug fouling, fuel system icing, and fuel system component deterioration.

Evinrude/Johnson **Fuel System Cleaner** will help keep carburetors and fuel system components in optimal operating condition.

FUEL SYSTEM PRIMING

Priming the Fuel System

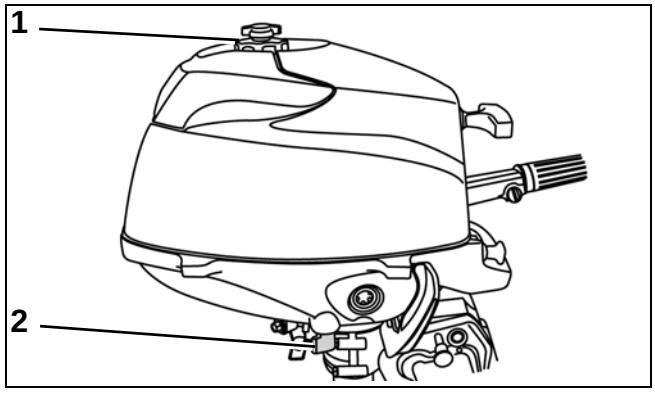
⚠ WARNING

Fuel vapors are highly flammable. Perform the following procedure in a well ventilated area. Extinguish all smoking materials and make certain no ignition sources are present.

3.5 HP MODELS

Remove fuel cap and add fuel to the integral fuel tank. Replace fuel cap and open fuel tank vent.

Turn ON fuel shut off valve.



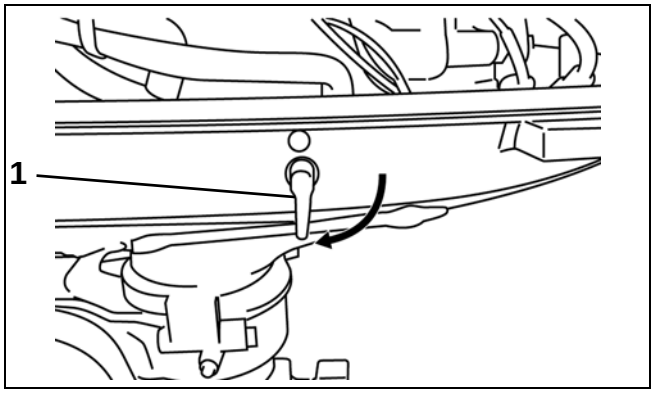
1. Fuel cap 008733
2. Fuel shut off valve

4, 6 HP MODELS

Integral Fuel Tank: Remove fuel cap and add fuel to the integral fuel tank.

Replace fuel cap and open fuel tank vent.

Turn the fuel selector valve to integral fuel tank position.

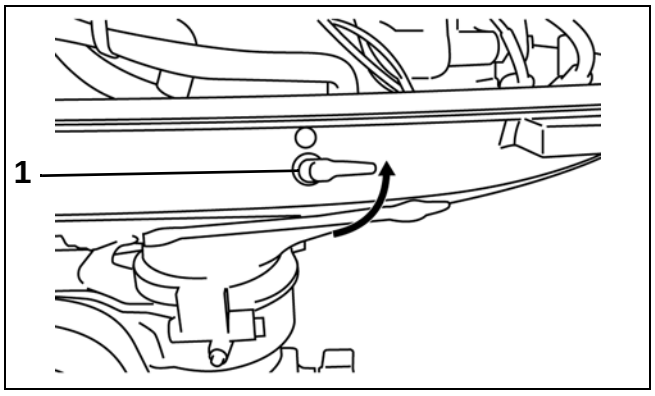


1. Fuel selector valve, integral fuel tank position 008734

Remote Fuel Tank: Remove fuel cap and add fuel to the remote fuel tank.

Replace fuel cap and open fuel tank vent.

Turn fuel selector valve to the remote fuel tank position.



1. Fuel selector valve, remote fuel tank position 008735

Connect the fuel hose connector to the quick connect fitting on the outboard.

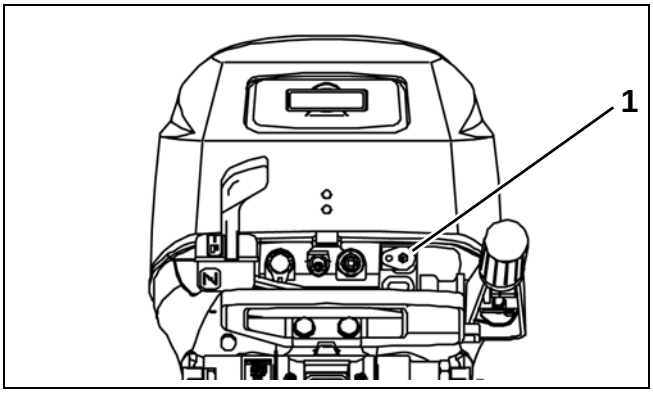
Use the primer bulb to fill the fuel system.

9.8, 15 HP MODELS

Remove fuel cap and add fuel to the remote fuel tank. Replace fuel cap and open fuel tank vent.

Connect the fuel hose connector to the quick connect fitting on the outboard.

Use the primer bulb to fill the fuel system.



1. Quick connect fitting 008736

Observe all fuel lines, both in the boat and on the outboard. Repair any fuel leaks.

⚠ WARNING

Failure to check for fuel leaks could allow a leak to go undetected, resulting in fire or explosion and may cause personal injury or property damage.

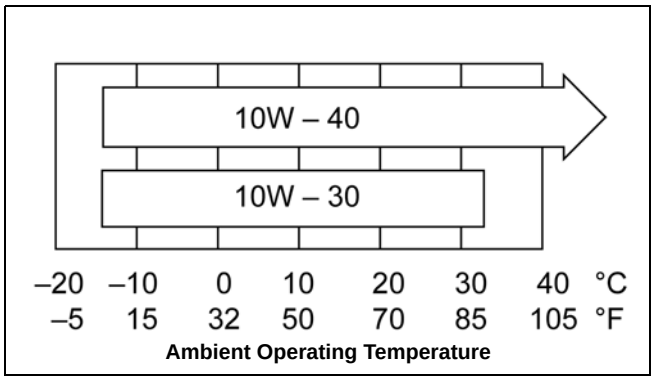
OIL REQUIREMENTS

Recommended Lubricants

Evinrude/Johnson Ultra 4–Stroke outboard oil is recommended for use in *Evinrude* 4-Stroke outboards.

If *Evinrude/Johnson Ultra 4–Stroke* outboard oil is not available, use a high quality SAE 10W–30, or 10W–40 oil with the *NMMA* certification FC-W, or with API rating SF, SG, SH, SJ, Sl, SM.

Choose 10W–30, or 10W–40 oil based on ambient operating temperature.



008737

Add Engine Oil

NOTICE **All 4-Stroke outboards are shipped without oil in the crankcase. You must add a recommended oil before starting the outboard for the first time. Failure to add engine oil will result in powerhead damage.**

Add recommended engine oil as follows:

Model	Qty	Notes
3.5 HP	10 oz. (296 ml)	–
4, 6 HP	15.2 oz. (450 ml)	–
9.8 HP	27.2 oz. (804 ml)	–
15 HP	1.1 qt. (1 L) 1.3 qt. (1.2 L)	Without oil filter change With oil filter change

NOTES

Technician’s Notes

Related Documents

Bulletins	
Instruction Sheets	
Other	

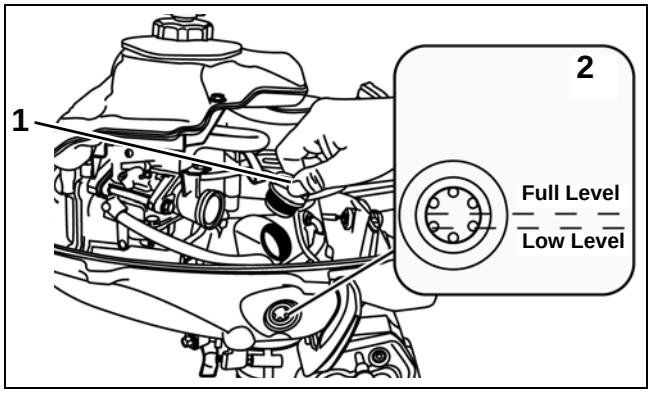
PREDELIVERY

BEFORE START-UP

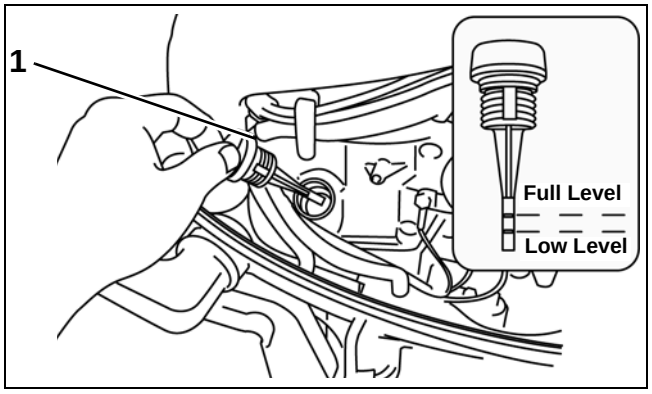
Engine Oil Level

Make sure crankcase contains an adequate supply of the correct lubricant for the outboard.

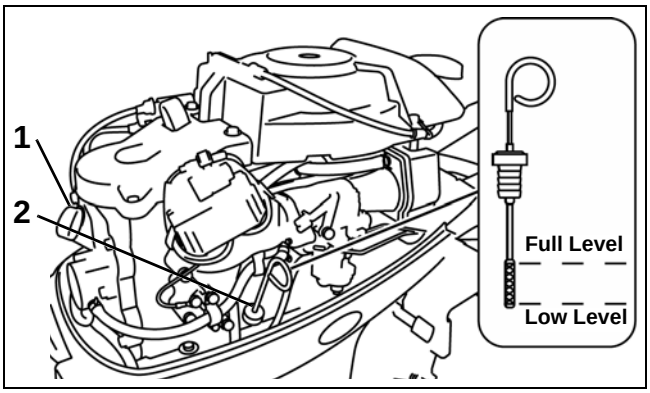
Refer to **Recommended Lubricants** on p. 43.



3.5 HP Models 008738
1. Oil fill cap
2. Oil level gauge



4, 6 HP Models 008739
1. Oil fill cap/ oil level gauge

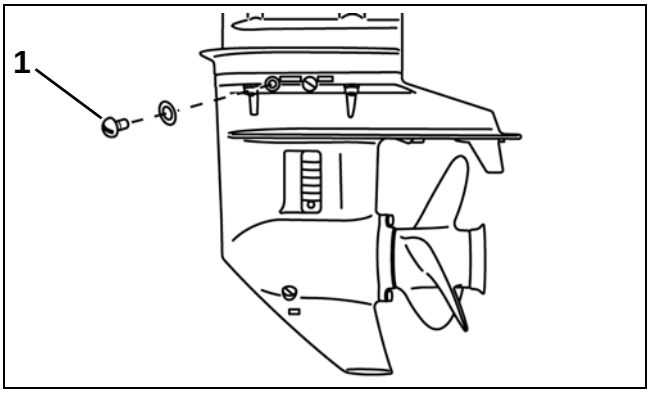


9.8, 15 HP Models 008740
1. Oil filler cap
2. Oil level gauge

Gearcase Lubricant

With outboard vertical, check the gearcase lubricant level:

- Remove the lubricant level plug. Lubricant must be even with the bottom of the threaded hole.
- A clean tie strap can be used as a “dip stick” if the lubricant level is not obvious.
- Add *HPF PRO* gearcase lubricant as needed.



1. Gearcase lubricant level plug (typical) 008741

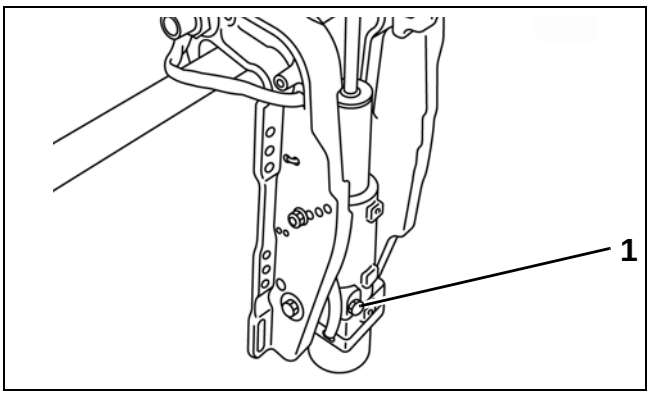
Trim and Tilt Fluid

⚠ CAUTION

Correct fluid level must be maintained to ensure operation of the impact protection built into the unit.

Make sure trim and tilt reservoir is full before running outboard:

- Tilt the outboard and engage the tilt support.
- Remove filler cap and check fluid level.
- Add *Power Trim/Tilt Fluid* or *GM Dexron II*, as needed, to bring level to the bottom of the fill plug threads.



1. Filler cap 008742

Install the filler cap and tighten to a torque of 132 in. lbs. (15 N·m).

- Disengage tilt support.
- Cycle the unit at least five complete cycles to purge all air from the system. When cycling the unit, hold the trim switch ON an additional 5 to 10 seconds after the unit reaches the end of its travel before activating the switch in the opposite direction.

RUNNING CHECKS

⚠ DANGER

DO NOT run the engine indoors or without adequate ventilation or permit exhaust fumes to accumulate in confined areas. Engine exhaust contains carbon monoxide which, if inhaled, can cause serious brain damage or death.

⚠ WARNING

Contact with a rotating propeller is likely to result in serious injury or death. Assure the engine and prop area is clear of people and objects before starting engine or operating boat. Do not allow anyone near a propeller, even when the engine is off. Blades can be sharp and the propeller can continue to turn even after the engine is off.

NOTICE **DO NOT run outboard without a water supply to the outboard's cooling system. Cooling system and/or powerhead damage could occur**

Fuel System

Perform running checks of the fuel system by following these steps:

- Squeeze fuel primer bulb until hard. Observe all fuel hoses and connections. Repair any leaks.
- Start outboard. Inspect all hoses and connections. Repair any leaks or misrouted hoses immediately.

Emergency Stop / Key Switch

Check emergency stop function. With outboard running at IDLE, pull safety lanyard from emergency stop switch. Outboard must stop immediately.

Remote Control Operation

Make sure that control can be easily moved into all gear and throttle settings. Do not shift remote control when outboard is not running.

Start-In-Gear Prevention

⚠ WARNING

Make certain that the starter will not operate when the outboard is in gear. The start-in-gear prevention feature is required by the United States Coast Guard to help prevent personal injuries.

Start outboard and shift to FORWARD.

Turn outboard OFF while control is in FORWARD.

Try to restart the outboard. Outboard should not start.

Shift back to NEUTRAL and restart outboard.

Shift to REVERSE. Turn outboard OFF while control is in REVERSE.

Try to restart the outboard. Outboard should not start.

Tachometer Pulse Setting

Confirm accuracy of tachometer reading.

- Adjust dial on back of tachometer to required setting (the outboard should not be running).

Outboard Model	Tachometer Setting
9.8, 15 HP	6 Pulse or 12 Pole

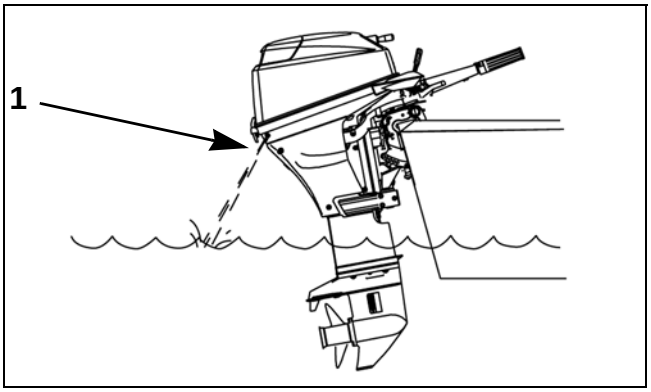
Idle Speed

Make sure the outboard idles within the specified idle RPM range. If the outboard is run on a flushing device, the idle speed and quality may not be representative of actual in water use.

Model	Idle RPM (in gear)
3.5 HP	1200 ±50
4, 6 HP	
9.8 HP	900 ±50
15 HP	

Water Pump Overboard Indicator

A steady stream of water should flow from the overboard indicator.



1. Water pump overboard indicator 008743

PROPELLERS

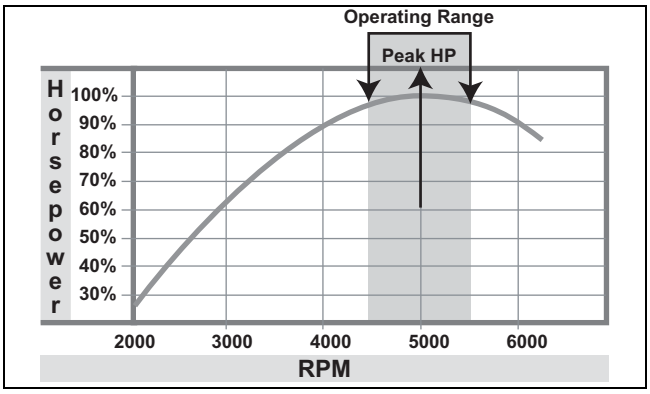
Propeller Selection

⚠ CAUTION

Selection of the wrong propeller could reduce engine service life, affect boat performance, or cause serious damage to the powerhead.

Water testing with various propeller designs and sizes is the best method of propeller selection.

The correct propeller, under normal load conditions, will allow the engine to run near the midpoint of the RPM operating range at full throttle. Refer to **SERVICE SPECIFICATIONS** in the **Service Manual** for RPM range.



008329

NOTICE **If the propeller blades have too much pitch, the engine will operate below its normal range at full throttle. Power will be lost, and powerhead damage could occur. If the propeller blades have too little pitch, the engine will operate above its normal range and damage from overspeeding could occur.**

When selecting a propeller, consider the following:

- Use an accurate tachometer to determine the engine's full-throttle RPM.
- The outboard should be trimmed for top speed.
- Select a propeller that suits the customer's application and allows the engine to run near the midpoint of the full-throttle operating range when the boat has a normal load.
- Occasionally, one propeller will not cover a wide range of boat applications — water skiing to high speed performance boating. In such cases, it might be necessary to have a propeller for each situation.
- Refer to the *Evinrude/Johnson Genuine Parts and Accessories Catalog* for propeller styles and sizes.

Propeller Hardware Installation

⚠ WARNING

To prevent accidental starting while servicing, twist and remove all spark plug leads.

IMPORTANT: Depending on propeller style, different thrust bushings, spacers, and cotter pin keepers are used. See the *Evinrude/Johnson Genuine Parts and Accessories Catalog* for correct propeller hardware.

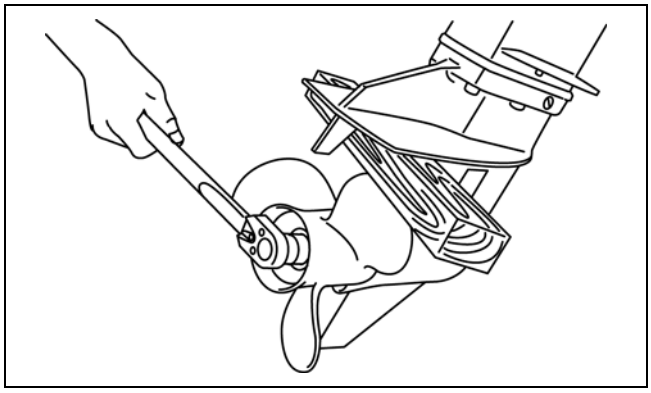
Apply *Triple Guard* grease to the entire propeller shaft before installing the propeller.

Install thrust bushing onto propeller shaft with taper of bushing matching taper of shaft.

Align splines of propeller and shaft. Push propeller until seated on the thrust bushing.

Install the washer over the propeller shaft.

Wedge a block of wood between propeller blade and the anti-ventilation plate.

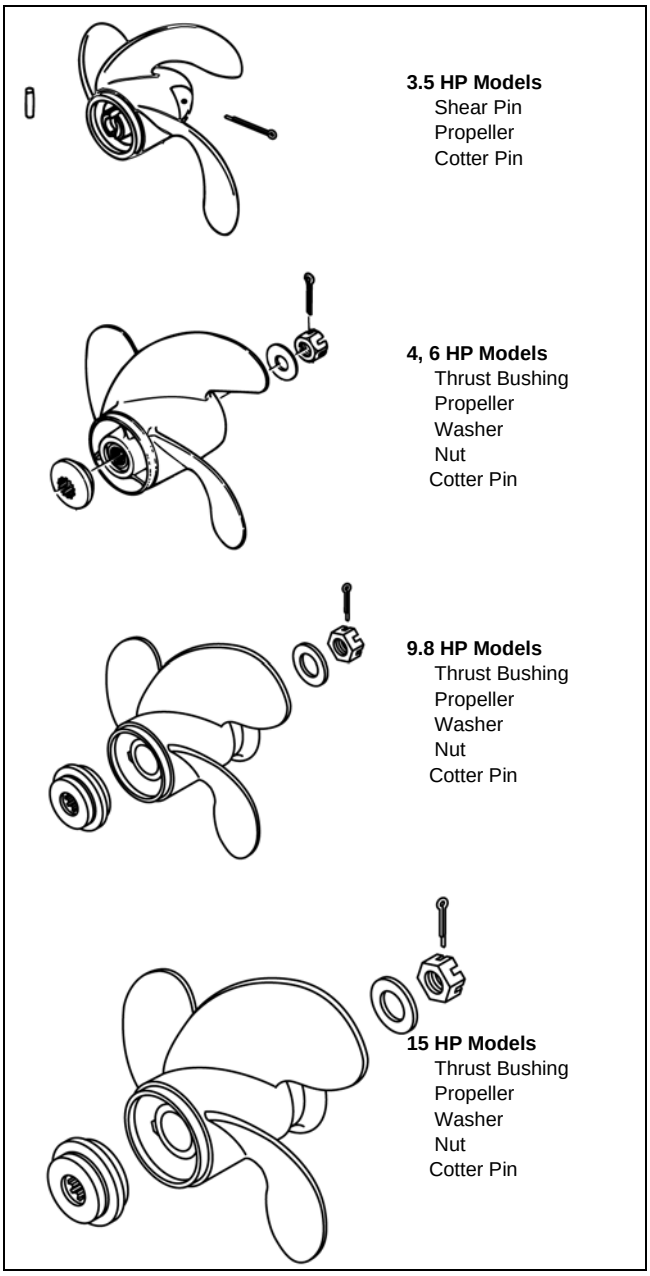


008744

Install the propeller nut and tighten to a torque of 9 ft. lbs. (12 N·m)

If cotter pin holes in the nut and shaft do not align, tighten further. Do not loosen.

Install new cotter pin.



Propeller Hardware 008745

IMPORTANT: After installation, make sure outboard is in NEUTRAL and carefully spin propeller. Propeller must turn freely and should not spin off center. If propeller appears to wobble, check for possible bent propeller shaft.

WATER TEST AND FINAL ADJUSTMENTS

An in the water test is required to make sure the outboard(s) and boat are rigged correctly, propeller selection is correct, and that all accessories function properly.

Pay special attention to the following, especially if the boat is repowered with new outboard(s):

- Engine mounting height
- Correct propeller selection and WOT RPM

Make all needed adjustments or repairs and retest before delivery.

When ready for delivery, give all instruction sheets, operating instructions and user guides provided with accessories to the owner. Advise the owner of any special operation or maintenance information contained in the instructions.

IMPORTANT: Complete the Predelivery Checklist and obtain owner's signature at the time of delivery. The Predelivery Checklist must be kept on file for seven years.

Break-In

Evinrude 4-Stroke outboards require break in. When the outboard is delivered, refer the customer to the Break In information in the **Operator's Guide**.

Follow this procedure to protect the outboard during its initial hours of operation. Careful break-in allows internal engine components to "seat" properly, resulting in maximum engine performance.

Failure to carefully follow the break-in procedures can result in engine damage.

1. First 10 minutes of operation — Operate the engine in gear at idle only.

2. Next 50 minutes — Operate engine in gear below 3000 RPM. DO NOT hold a constant throttle setting. Change engine speed every 15 minutes.

3. Second Hour — Use full throttle to accelerate boat onto plane, then reduce throttle setting to half. BE SURE the boat remains on plane at this throttle setting.

At ten minute intervals, apply full throttle for periods of one minute, Return to half throttle for a cooling period.

Change engine speed every 15 minutes.

4. Next Eight Hours — Operate engine in gear below 4000 RPM. Use full throttle to quickly accelerate boat onto plane. Immediately reduce throttle to three–quarters or less, as soon as the boat is on plane. BE SURE the boat remains on plane at this throttle setting.

At ten minute intervals, apply full throttle for periods of one to two minutes. Return to three–quarters throttle for a cooling period.

Change the engine speed every 15 minutes.

DO NOT exceed recommended maximum engine RPM. Refer to Engine Specifications in the outboard **Operator's Guide**.

Trim Tab Adjustment

⚠ WARNING

Improper trim tab adjustment can cause difficult steering and loss of control.

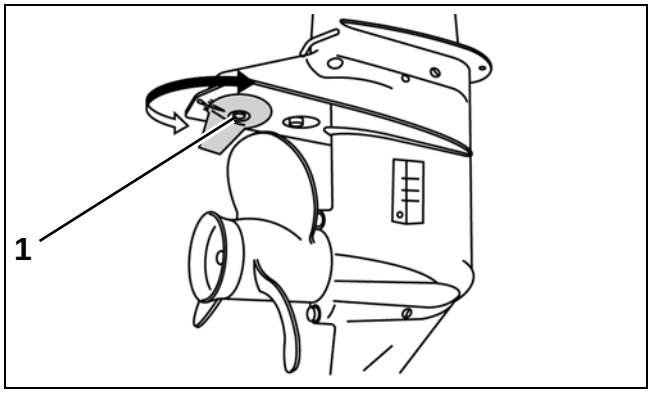
A propeller will generate steering torque when the propeller shaft is not running parallel to the water's surface. The trim tab is adjustable to compensate for this steering torque.

IMPORTANT: A single trim tab adjustment will relieve steering effort under only one set of speed, outboard angle and load conditions. No single adjustment can relieve steering effort under all conditions.

If the boat pulls to the left or right when its load is evenly distributed, adjust the trim tab as follows:

- With the remote control in NEUTRAL and the engine OFF, loosen the trim tab screw.
- If the boat pulled to the right, move rear of the trim tab slightly to the right.
- If the boat pulled to the left, move rear of the trim tab slightly to the left.

Tighten the trim tab screw to 5 ft. lbs. (6 N·m).



1. Trim tab screw 008746

Test the boat and, if needed, repeat the procedure until steering effort is as equal as possible.

PREDELIVERY CHECKLIST

A Predelivery Checklist is included in the owner' s package of every outboard. Use the Predelivery Checklist to ensure a complete predelivery inspection is performed on each *Evinrude* 4-Stroke outboard before the outboard is delivered to the owner or the operator.

Refer to the **Sample Predelivery Checklist** on p. 52.

Dealers are required to perform a complete predelivery inspection on each outboard. Outboards installed by boat manufacturers also require a complete predelivery inspection

Always reference *Evinrude* and *Johnson* publications to support required installation procedures.

Dealers MUST keep predelivery checklists on file for a minimum of seven years. As part of ongoing dealer evaluations, your BRP representative may ask to see dealer service records to confirm the use of predelivery checklists.

Dealer predelivery programs should include additional inspections related to the boat, boat accessories and the trailer.

Sample Predelivery Checklist

PREDELIVERY CHECKLIST – 4-STROKE

Outbound:

MODEL NUMBER	SERIAL NUMBER

EVINRUDE Johnson BRP

IMPORTANT: Use this Checklist together with the *Evinrude*/*Johnson* Installation and Predelivery Guide. Every *Evinrude*/*Johnson* Dealer is responsible to perform a complete predelivery inspection on all *Evinrude*/*Johnson* outboards. If an *Evinrude*/*Johnson* outboard was pre-rigged by the boat builder, a complete predelivery inspection is still required. Refer to the current *Evinrude*/*Johnson* Installation and Predelivery Guide for detailed instructions. Dealer predelivery programs should include additional inspections related to boat accessories and trailers.

	OB
At time of sale, explain to owner	✓
Explain to owner all on-product Safety Labels/ Tags and the importance of reading the Operator's Guide before operating engine	
Install engine Safety Labels/Tags (language chosen by customer according to availability)	
Explain the BRP Limited Warranty	
Parts Installation	
Stern bracket mounting hardware and height	
Steering system and connectors	
Remote control with start-in-gear prevention	
Throttle and shift cables	
Fuel hoses, primers, and clamps	
Instrument harness(es) and key switch(es)	
Emergency stop switch and safety lanyard	
Heavy-duty marine battery terminals	
Propeller(s)	
Battery(s) – NO wing nuts	
Battery switch(es) *(optional)*	
Accessory gauges *(optional)*	
Water-separating fuel filter(s) *(optional)*	
Accessory battery charge wiring *(optional)*	
Lubricants and Fluids	✓
Check engine crankcase lubricant level	
Power trim and tilt fluid level	
Gearcase lubricant level	
Steering system grease or fluid level	
Fuel	
Adjustments and Procedures	✓
Throttle and shift cable	
Outboard clearances	
Trailering bracket, inspect ground clearance	
Fuel system primed	
Check idle speed	
Fuel System Pressurization	✓
Inspect for fuel leaks (outboard running)	

Final Inspection *Operational checks and appearance*	✓
Safety lanyard and key switch	
Remote control	
Water pump overboard indicator	
All gauges (tachometer, fuel, etc.)	
Accessories (switches, primers, etc.)	
Water test for propeller selection and WOT	
Steering system	
Trailering bracket and ground clearance	
Clean thoroughly and wash	
At time of delivery dealer:	✓
Complete electronic warranty registration	
Must retain this document with outboard file	
Give owner a completed copy of this form	

The dealer named in this document has instructed me on the operation, maintenance, safety features, and warranty policy for my outboard, all of which I understand.

I am satisfied with the predelivery set-up and inspection of my outboard. I acknowledge that I have reviewed the on product safety labels and tags.

I understand the importance of reading the operator's guide that I have received completely and thoroughly before operating the engine(s).

Inspected by: _____

Dealer name: _____

Dealer number: _____

_____
Date

_____
Dealer Signature

Where not already required by law: I recognize the importance of following safe boating practices.

☐ I have taken a safe boating course before using the outboard.

☐ I will take a safe boating course before using the outboard.

☐ I will not take a safe boating course before using the outboard.

_____
Date

_____
Owner Signature

INDEX


BRP