Installation & Predelivery Guide

Evinrude E-TEC G2
150, 175, 200 HP, 66° V6 (2.7 L)
200, 225, 250, 300 HP, 74°V6 (3.4 L)

EVINRUDE® E-TEC®

BRP

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Original Instructions

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Installation & Predelivery Guide

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Introduction

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Safety Information

This publication is written for qualified, factory-trained technicians who are already familiar with the use of *Evinrude* 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.

ENVIRONMENTAL NOTE:

A note which provides tips and behaviors related to protecting the environment.

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 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

What's New

General Information

Review this installation guide BEFORE beginning the installation. Pay specific attention to the following sections, as they contain information that is new, updated or unique to *Evinrude E-TEC G2* products:

- UPDATED: **Model Designation** on p. 10
- UPDATED: **Outboard Selection** on p. 13
- **Reserved Fluid Level Instancing** on p. 18
- UPDATED: **Steering Systems** on p. 22
- **Battery Cable Requirements** on p. 31
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- UPDATED: **Multiple Outboard Centerlines** on p. 48
- **Lifting The Outboard** on p. 54
- **Mounting Height** on p. 55
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- **Multiple Outboard Mounting Height** on p. 57
- UPDATED: **Plug Installation** on p. 58
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- NEW: **66° V6 Models Hose and Cable Lengths (TRAC+ Midsection)** on p. 63
- NEW: **66° V6 Models Hose and Cable Lengths (Full Featured Midsection)** on p. 64
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- UPDATED: **Cable & Hose Connections** on p. 68
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- **Oil Supply Priming** on p. 86
- UPDATED: **Steering Position Sensor Calibration (DPS Models Only)** on p. 90
- **Propeller Hardware Installation** on p. 93

Steering System Considerations

Counter rotation outboards WITH DPS are now available. See **Model Designation** on p. 10.

Improvements have been made to the DPS system. Be sure to review **Dynamic Power Steering System Improvements** on p. 23.

IMPORTANT: Install one outboard with DPS for every non-DPS outboard.

Multiple Outboard Applications

⚠ WARNING

Outboards equipped with the DPS-2 system REQUIRE calibration when multiple outboards are installed. Refer to Dynamic Power Steering System Improvements on p. 23.

Failure to complete DPS system calibration can cause damage to the tie bar(s) and/or the transom of the boat due to overloading.

When installing multiple outboards:

- Each engine requires a separate fuel tank pickup and fuel hose. See **Fuel System Requirements** on p. 36.
- Each engine requires a separate battery cable. See **Battery Cable Requirements** on p. 31.

When installing three or four outboards, the center outboards should be mounted no more than one mounting hole location lower or higher than the outside engines. See **Multiple Outboard Mounting Height** on p. 57.

IMPORTANT: Install one outboard with DPS for every non-DPS outboard.

- When installing two outboards, one outboard MUST have DPS.
- When installing three or four outboards, two outboards MUST have DPS. See **Multiple Outboard Transom Mounting Locations** on p. 56.
- See **Outboard Selection** on p. 13.

Also see **Hydraulic Steering** on p. 144.

Emissions-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.

A repair shop or person of the owner's choosing may maintain, replace, or repair emission control devices and systems. These instructions do not require components or service by BRP or authorized Evinrude dealers. Although an authorized Evinrude dealer has the in-depth technical knowledge and tools to service Evinrude outboard engines, the emission-related warranty is not conditioned on the use of an authorized Evinrude dealer or any other establishment with which BRP has a commercial relationship.

For emission-related warranty claims, BRP is limiting the diagnosis and repair of emission-related parts to authorized Evinrude dealers. For more information, please refer to the US EPA EMISSION-RELATED WARRANTY contained herein. Proper maintenance is the owner's responsibility. A warranty claim may be denied if, among other things, the owner or operator caused the problem through improper maintenance or use.

You must follow the instructions for fuel requirements in the FUEL REQUIREMENTS section of this manual. Even if gasoline containing greater than ten volume percent ethanol is readily available, the US EPA has issued a prohibition against the use of gasoline containing greater than 10 vol% ethanol that applies to this engine. The use of gasoline containing greater than 10 vol% ethanol with this engine may harm the emission control system.

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* 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* 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:

U.S. Environmental Protection Agency
Office of Transportation and Air Quality
Certification Division
Gasoline Engine Compliance Center
2000 Traverwood Drive
Ann Arbor, MI 48105

EPA Internet Web Site:

www.epa.gov/otaq

Model Designation

Engine Identification

ENGINE FAMILY IDENTIFICATION:

A	Alternate Feature*
C	66° V6 G2 Models
E	74° V6 G2 Models

DESIGN FEATURES:

C	Counter Rotation
F	Dynamic Power Steering (DPS)
H	High Output
O	Integrated Hydraulic Steering (IHS)
P	Cable Steering
U	300 HP with Water Valve

SHAFT LENGTH:

L	20 in. (508 mm)
X	25 in. (635 mm)
Z	30 in. (762 mm)

MODEL IDENTIFICATION

The first two characters identify **Model Version:**

AA A	First major variant
AB A	Second major variant
AF A	Third major variant

- follow the model identification shown above.
- subsequent versions continue through the alphabet as *AG*, *AH* etc.
- will not use letters from the word INTRODUCES to identify models.

C 150 PLH AB A

HORSEPOWER

The third character identifies **Model Revision:**

AA **A**	First revision
AA **B**	Second revision

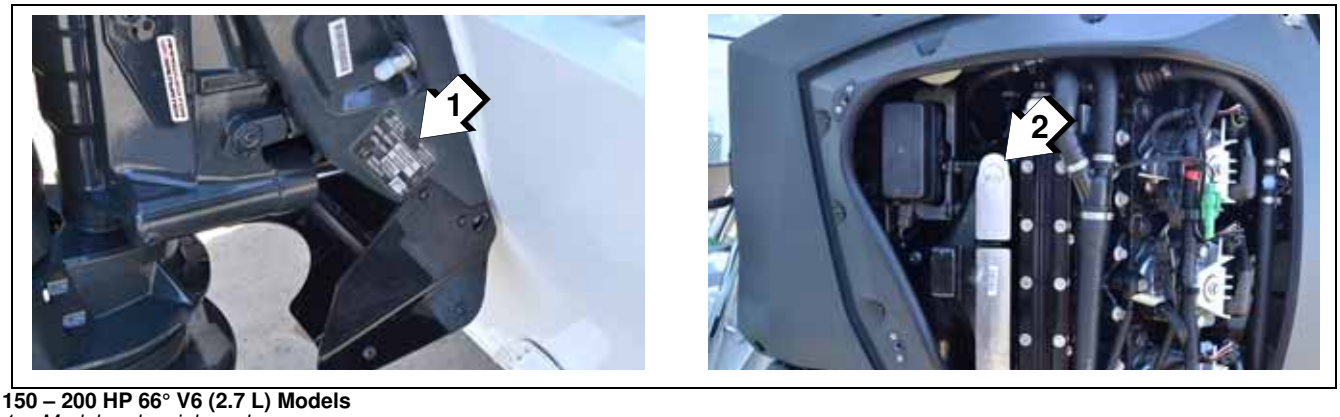
Subsequent revisions continue through the alphabet in order (*A through Z*).

* Refer to Model Tables under **Models Covered** on p. 11.

Model and Serial Number Location

Model and serial numbers are located on the swivel bracket and on the powerhead.

150 – 200 HP 66° V6 (2.7 L) Models 009146
1. Model and serial number 010199
2. Serial number



150 – 200 HP 66° V6 (2.7 L) Models
1. Model and serial number
2. Serial number

Models Covered

This guide covers installation information on the following *Evinrude E-TEC G2* models:

150, 150 H.O., 175, 200 HP, 167 Cubic Inch (2.7 L), 66° V6, Models.

HP	Model Number	Shaft Length	Gearcase		Midsection & Steering	Graphics	Standard Features	Special Features
			Style	Gear Ratio				
150	C150PLAA	20	SLX	12:26 (0.46) (2.16:1)	TRAC+ [1]	Standard	Digital EST [4]	
	C150PLHAA	20	SLX	12:26 (0.46) (2.16:1)	TRAC+ [1]	Custom H.O.	Digital EST [4]	H.O.
	C150PXAA	25	SLX	12:26 (0.46) (2.16:1)	TRAC+ [1]	Standard	Digital EST [4]	
	C150PXHAA	25	SLX	12:26 (0.46) (2.16:1)	TRAC+ [1]	Custom H.O.	Digital EST [4]	H.O.
	C150PXCAA	25	SLX	12:26 (0.46) (2.16:1)	TRAC+ [1]	Standard	Digital EST [4]	
	C150FLHAA	20	SLX	12:26 (0.46) (2.16:1)	DPS [2]	Custom H.O.	Digital EST [4]	H.O.
	C150FXHAA	25	SLX	12:26 (0.46) (2.16:1)	DPS [2]	Custom H.O.	Digital EST [4]	H.O.
	C150XHCAA	25	SLX Counter Rotation	12:26 (0.46) (2.16:1)	IHS [3]	Custom H.O.	Digital EST [4]	H.O.
175	175FLAA	20	SLX	12:26 (0.46) (2.16:1)	DPS [2]	Standard	Digital EST [4]	
	175FXAA	25	SLX	12:26 (0.46) (2.16:1)	DPS [2]	Standard	Digital EST [4]	
	175XCAA	25	SLX Counter Rotation	12:26 (0.46) (2.16:1)	IHS [3]	Standard	Digital EST [4]	
200	C200FLAA	20	SLX	12:26 (0.46) (2.16:1)	DPS [2]	Standard	Digital EST [4]	
	C200FXAA	25	SLX	12:26 (0.46) (2.16:1)	DPS [2]	Standard	Digital EST [4]	
	C200XCAA	25	SLX Counter Rotation	12:26 (0.46) (2.16:1)	IHS [3]	Standard	Digital EST [4]	
	C200XOAA	25	SLX	12:26 (0.46) (2.16:1)	IHS [3]	Standard	Digital EST [4]	

1. TRAC+ use with cable or non-integrated hydraulic 2. Full Featured with Dynamic Power Steering 3. Full Featured with Integrated Hydraulic Steering
4. Digital Electronic Shift & Throttle

200 H.O., 225, 250, 250 H.O., 300 HP, 210 Cubic Inch (3.4 L), 74° V6, Models.

HP	Model Number	Shaft Length	Gearcase		Midsection & Steering	Graphics	Standard Features	Special Features
			Style	Gear Ratio				
200	E200LHA_ _	20	SLX	13:24/0.542/1.85:1	DPS [1]	Custom H.O.	Digital EST [3]	H.O.
	E200LHOA_ _	20	SLX	13:24/0.542/1.85:1	IHS [2]	Custom H.O.	Digital EST [3]	H.O.
	E200XHAB_ _	25	SLX	13:24/0.542/1.85:1	DPS [1]	H.O. Standard	Digital EST [3]	H.O.
	E200XHCAB_ _	25	SLX Counter Rotation	13:24/0.542/1.85:1	IHS [2]	H.O. Standard	Digital EST [3]	H.O.
	A200XHCA_ _	25	SLX Counter Rotation	13:24/0.542/1.85:1	DPS [1]	Custom H.O.	Digital EST [3]	CR/DPS [4], H.O.
225	E225X_ _ _	25	SLX	13:24/0.542/1.85:1	DPS [1]	Standard	Digital EST [3]	
	E225XC_ _ _	25	SLX Counter Rotation	13:24/0.542/1.85:1	IHS [2]	Standard	Digital EST [3]	
225H	E225LH_ _ _	20	SLX	13:24/0.542/1.85:1	DPS [1]	Custom H.O.	Digital EST [3]	H.O.
	E225XH_ _ _	25	SLX	13:24/0.542/1.85:1	DPS [1]	Custom H.O.	Digital EST [3]	H.O.
	E225XCH_ _ _	25	SLX Counter Rotation	13:24/0.542/1.85:1	DPS [1]	Custom H.O.	Digital EST [3]	H.O.
	E225LHO_ _ _	20	SLX	13:24/0.542/1.85:1	IHS [2]	Custom H.O.	Digital EST [3]	H.O.
250	E250X_ _ _	25	SLX	13:24/0.542/1.85:1	DPS [1]	Standard	Digital EST [3]	
	E250Z_ _ _	30	SLX	13:24/0.542/1.85:1	DPS [1]	Standard	Digital EST [3]	
	E250XC_ _ _	25	SLX Counter Rotation	13:24/0.542/1.85:1	IHS [2]	Standard	Digital EST [3]	
	A250XC_ _ _	25	SLX Counter Rotation	13:24/0.542/1.85:1	DPS [1]	Standard	Digital EST [3]	CR/DPS 4, H.O.
	E250ZC_ _ _	30	SLX Counter Rotation	13:24/0.542/1.85:1	IHS [2]	Standard	Digital EST [3]	
	A250ZC_ _ _	30	SLX Counter Rotation	13:24/0.542/1.85:1	DPS [1]	Standard	Digital EST [3]	CR/DPS [4]
250H	E250LH_ _ _	20	SLX	13:24/0.542/1.85:1	DPS [1]	Custom H.O.	Digital EST [3]	H.O.
	E250XH_ _ _	25	SLX	13:24/0.542/1.85:1	DPS [1]	Custom H.O.	Digital EST [3]	H.O.
	E250XCH_ _ _	25	SLX Counter Rotation	13:24/0.542/1.85:1	DPS [1]	Custom H.O.	Digital EST [3]	H.O.
	E250LHO_ _ _	20	SLX	13:24/0.542/1.85:1	IHS [2]	Custom H.O.	Digital EST [3]	H.O.
300	E300LU_ _ _	20	SLX	13:24/0.542/1.85:1	DPS [1]	Standard	Digital EST [3]	
	E300XU_ _ _	25	SLX	13:24/0.542/1.85:1	DPS [1]	Standard	Digital EST [3]	
	E300ZU_ _ _	30	SLX	13:24/0.542/1.85:1	DPS [1]	Standard	Digital EST [3]	
	E300XCU_ _ _	25	SLX Counter Rotation	13:24/0.542/1.85:1	IHS [2]	Standard	Digital EST [3]	
	A300XCU_ _ _	30	SLX Counter Rotation	13:24/0.542/1.85:1	DPS [1]	Standard	Digital EST [3]	CR/DPS [4]
	E300ZCU_ _ _	30	SLX Counter Rotation	13:24/0.542/1.85:1	IHS [2]	Standard	Digital EST [3]	
	A300ZCU_ _ _	30	SLX Counter Rotation	13:24/0.542/1.85:1	DPS [1]	Standard	Digital EST [3]	CR/DPS [4]

1. Full Featured with Dynamic Power Steering 2. Full Featured with Integrated Hydraulic Steering 3. Digital Electronic Shift & Throttle
4. Alternative Feature: Counter-Rotation model with DPS

Outboard Selection

Compatibility for Certain Installation Options

Improvements have been made to the DPS system to support additional installation options. See **Dynamic Power Steering System Improvements** on p. 23. When installing multiple outboards, remember the 200 H.O. – 300 HP, 74° V6 ABA outboard models are NOT compatible with AFA and newer outboard models. See **Remote Control Firmware** on p. 28. Review the following chart and notes BEFORE installing any outboard(s) on the boat.

Models	Options	Outboard Installation Options				Compatibility Options			
						Multiple Outboard Installations		Single Outboard Installations	
		One	Two	Three	Four	*i-Dock* [6]	Hydraulic Tie Bar	High Speed Boats	*Pro-Series*/ *SVS-Series* Helms
66° V6 MODELS ONLY									
All Standard Rotation	DPS	Yes	Yes [1]	Yes [1, 4, 7]	Yes [1, 5, 7]	No [6]	Yes [1, 2, 8]	Yes	Yes [1]
	IHS	Yes	[6]	[6]	[6]	Yes [1, 6, 8]			Yes [1]
C150PL C150PX	TRAC+	Yes	No	No	No	No	No	Yes	Yes
C_ _ _XC C_ _ _XHC	Counter-Rotation IHS	NR *	Yes [1]	Yes [1]	Yes [1]	Yes [1, 6, 8]	Yes [2]	No	No
74° V6 MODELS (AB Models ONLY)									
	DPS	Yes	Yes [1]	No	No	No [6]	Yes [2]	NR *	No [3]
E200LHO E225LHO E250LHO	IHS	Yes	No	No	No	No [6]	No	Yes	Yes
E_ _ _CX E_ _ _CZ	IHS Counter-Rotation	NR *	Yes [1]	No	No	No [6]	Yes [2]	No	No
A_ _ _ XHC A_ _ _ XC A_ _ _ XZ	DPS Counter-Rotation	NR *	Yes [1]	No	No	No [6]	Yes [2]	No	No
74° V6 MODELS (AF & Newer Models)									
All Standard Rotation	DPS	Yes	Yes [1]	Yes [1, 4, 7]	Yes [1, 5, 7]	No [6]	Yes [1, 2, 8]	Yes	Yes [1]
	IHS	Yes	[6]	[6]	[6]	Yes [1, 6, 8]			Yes [1]
E200LHO E225LHO E250LHO	IHS	Yes	No	No	No	No	No	Yes	Yes
E_ _ _CX E_ _ _CZ	IHS Counter-Rotation	NR *	Yes [1]	Yes [1]	Yes [1]	Yes [1, 6, 8]	Yes [2]	No	No
A_ _ _ XHC A_ _ _ XC A_ _ _ XZ	DPS Counter-Rotation	NR *	Yes [1]	No	No	No	No [2]	No	No

* NR: NOT Recommended
** NA: Not Applicable

See footnotes on next page.

Notes:

1. Per helm the manufacturers recommendation, *Uflex SVS-Series* and *SeaStar Pro-Series* helms are NOT recommended for use in multiple outboard installations. See **Pro Series Helms** on p. 23.
2. Hydraulic Tie Bar System REQUIRES one DPS and one Non-DPS outboard. Also REQUIRES 3000 psi hoses between the outboards, refer to the **Installation Instructions** provided with Hydraulic Tie Bar Kit.
3. AB model outboards with DPS are NOT compatible with *SeaStar Pro-Series*, or *Uflex SVS-Series* Helms.
4. A three outboard installation (non- *i-Dock*) REQUIRES 2 DPS models, but NOT three. See **Multiple Outboard Transom Mounting Locations** on p. 56.
5. A four outboard installation (non- *i-Dock*) REQUIRES 2 DPS models. DPS outboards must NOT be next to each other on the transom (unless they are in positions 2 & 3). See **Multiple Outboard Transom Mounting Locations** on p. 56.
6. The *Evinrude i-Dock* steering system REQUIRES **IHS** outboard models. Refer to the model tables in **Models Covered** on p. 11, for available **IHS** models.
7. For three and four outboard installations, the following counter-rotation models are available with DPS if needed: A200XHC, A250XC, A250ZC, A300XC, or A300ZC.
8. Do NOT combine the *Evinrude i-Dock* Joy Stick Steering System with the hydraulic tie bar kit.

Networks

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Remote Control Networks

⚠ WARNING

Remote controls 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 engine cut-off 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.

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:

- Start-in-gear prevention
- Engine cut–off switch with tether cord —multiple-outboard installations require separate start switches and a single engine cut–off switch
- Connections for engine monitor warning system Refer to **Engine Monitor System** on p. 17.
- If a mechanical remote control is selected:
  –shift stroke must be 1.125 to 1.330 in. (28.6 to 33.8 mm) between NEUTRAL and FORWARD
  –throttle stroke must PUSH for open

Several remote control options, including both electronic and mechanical systems, are available in the ***Evinrude Genuine Parts and Accessories*** catalog.

Remote Control System Selection

ICON II Electronic Shift and Throttle Remote Control Systems

Electronic shift and throttle remote control systems manage all engine control functions through a low-voltage, digital data network.

***Evinrude ICON* multi-engine control** 007986

These systems can only be used with outboards equipped for electronic control, including *Evinrude E-TEC G2* models.

Refer to the installation instructions provided with the remote control for detailed instructions.

Refer to **Diagrams** at the back of this guide, for sample installations.

Mechanical Remote Control Systems

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

A mechanical remote control may be used with *Evinrude E-TEC G2* model outboards, however an accessory mechanical to digital converter is required for correct operation of the outboard.

Mechanical to Digital Converter

The mechanical to digital converter converts the mechanical shift and throttle inputs to digital control signals used by the engine management systems.

Refer to the installation instructions provided with the mechanical to digital converter for detailed instructions.

Refer to **Mechanical Remote Controls** on p. 128.

Remote Control Installation

Refer to **Remote Control Installation** on p. 28, and follow all instructions provided with the remote control.

Use the accessory power connector provided in the remote control harness to connect any boat accessories. Accessories connected to the accessory power connector should not exceed 5 amps.

Information Display Networks

Engine Monitor System

All remote controlled outboards must be equipped with an engine monitor system. An engine monitor system alerts the operator of conditions that could damage the outboard.

The engine monitor system includes sensors on the outboard and oil tank, a warning horn, a dash-mounted display, and related wiring.

The outboard's *EMM* sends information about monitored functions to:

- Digital gauges and displays.
- a *SystemCheck* gauge (REQUIRES a digital to analog converter).

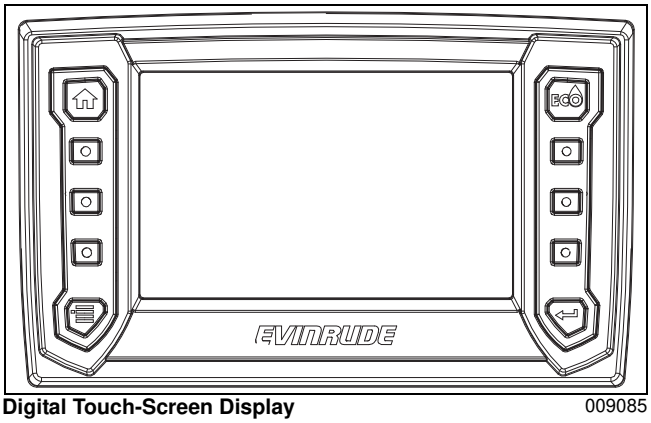
IMPORTANT: Operating the outboard without an engine monitor will void the warranty for failures related to monitored functions.

Digital Gauges and Displays

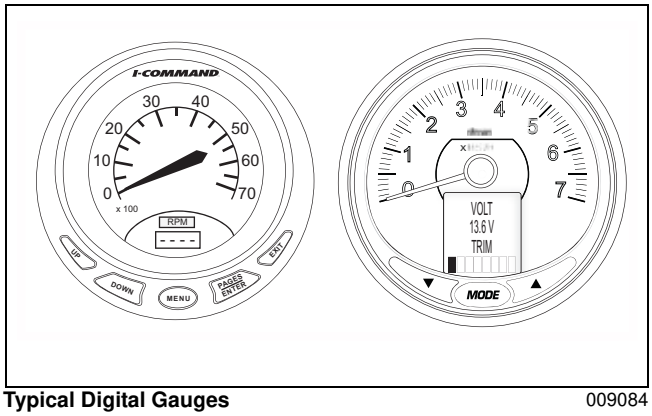
Digital displays are designed specifically for *NMEA 2000* certified *Evinrude E-TEC G2* outboards. These displays provide enhanced engine and boat performance information. Multiple functions are integrated into the easy-to-use displays. Additional displays and accessories can be added with the plug and play design.

NMEA 2000 digital networks receive monitored information through a *NMEA 2000* buss cable connection provided in the outboard.

Digital displays may be used with electronic shift and throttle or mechanical remote control systems.



Digital Touch-Screen Display 009085



Typical Digital Gauges 009084

When installing a *NMEA 2000* digital network, remember:

- A terminator must be installed at each end of the network. A terminator kit provides the required pieces.
- There should be no open or unused network device connectors.
- The network should be grounded at a single location only.

Refer to **NMEA 2000 Network** on p. 20.

Refer to **Digital Displays** on p. 132.

Reserved Fluid Level Instancing

When installing and setting up fluid level devices on the *NMEA 2000* network, the following instance numbers are reserved and should not be used for any other devices.

Instance	Oil	Fuel	Other	Reserved For:
0	X			On-Engine Oil Tank (up to 4 Engines)
1	X			
2	X			
3	X			
4	1	X		*ICON II* Remote Controls [1]
5	1	X		
6	X	1		
7	X	1		
8	X		2	*ICON Touch* Digital Displays [2]
9	X		2	
10	X		2	
11 - 15				Navico Devices

1. *ICON II* remote controls: Default settings shown. Can be reconfigured to monitor fuel or oil levels.

2. *ICON Touch* digital displays: Default settings shown. Can be reconfigured to monitor fresh water, gray water, or black water levels.

SystemCheck and Analog Gauges

SystemCheck gauges may be used with electronic shift and throttle or mechanical remote control systems.

If an analog gauge display is used, the *NMEA 2000* network transmits monitored information to an accessory digital to analog converter, which in turn supplies the information to *SystemCheck* and other analog gauges.

A *SystemCheck* 2 inch gauge or tachometer is REQUIRED.

Refer to **Analog Displays** on p. 140

Specifications

Remote Control Network

Supply Voltage (Boat System)	9 to 18 VDC
Operating Voltage (Remote Control Network)	5 VDC
Engine Control	1, 2, 3, or 4 outboards
Reverse Polarity Protection	Continuous
Fuse, Network Power Cable	10 Amp, ATO Type, P/N 967545
Network Interface	Proprietary
Operating Temperature Range	-13° to 167° F (-25° to 75° C)
Maximum Current Draw (with Master Power Switch OFF)	10µA

The remote control system network wire colors are as follows:

Pin	Control Wire Designation	Wire Color
1	Wake Up	Black/White
2	Power supply (+VDC)	Red
3	Ground (–VDC)	Black
4	Data HI (Signal)	White
5	Data LOW (Signal)	Blue
6	Stop Circuit	Black/Yellow

Grounding Requirements

The remote control network should be grounded at a SINGLE location. This is normally done at the network power cable connection and should be robustly connected to the boat's grounding system.

There must be no other ground connections on the remote control network to avoid ground loops, which can cause problems with system performance.

Maximum Number of Devices

A maximum of 10 devices can be attached to the remote control network. The number of devices is limited by the number of hub connections.

6-port hubs are NOT required in all installations. Refer to **Diagrams** on p. 107.

IMPORTANT: Only connect remote control components to the remote control network.

Open Device Connectors

Install protective covers on "open" or unused device connectors.

Remote Control Network Requirements

The remote control network requires the following components:

- One remote control
- One OFF-ON-START key switch or one master power key switch
- One START/STOP switch for each engine (multiple engine installations only)
- One trim switch panel (3, or 4 engines only)
- 6-port hub (see installation diagrams)
- One backbone buss cable
- One, two, three, or four outboards

Installations using an optional second station requires the following additional components:

- One remote control
- 6-port hub (see installation diagrams)
- One emergency stop switch
- One START/STOP switch for each engine
- One trim switch panel (3, or 4 engine installations only)

Load Equivalency

The Engine Management Module (*EMM*) on *Evinrude E-TEC G2* outboards has a load equivalency number of 1. Less than 50 mA of the network's (CAN) power is used by the *EMM*.

NMEA 2000 Network

Cable Requirements

NMEA 2000 specifies the following requirements:

NMEA 2000 Cable (Light/Micro Buss)	
Maximum Current	4 AMPS
Resistance - Power Wire(s)	5.40 Ω per 100 M
Power Wire Size	22 AWG
Data Wire Size	24 AWG

NMEA 2000 specifies the following wire colors:

- Power supply (+VDC): Red
- Ground (–VDC): Black
- Shield (Drain): Bare
- Data HI (Signal): White
- Data LOW (Signal): Blue

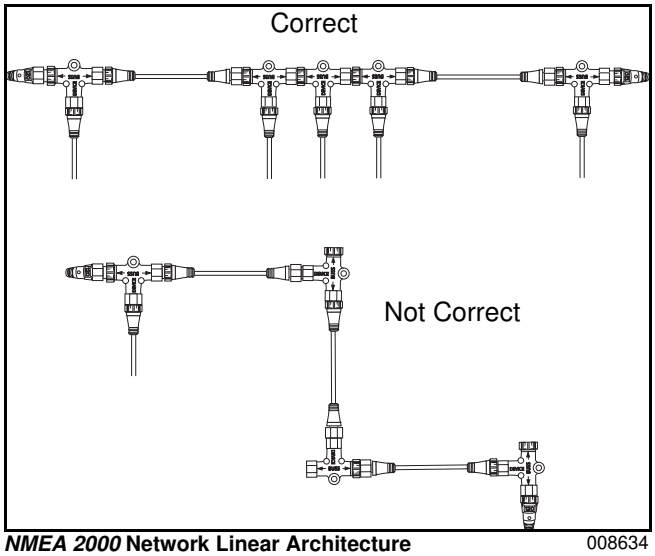
Grounding Requirements

Identify which battery supplies power to the network. Connect all power supply batteries in parallel. Ground the *NMEA 2000* network directly to the negative terminal of the PRIMARY or power supply battery.

See **Battery Installation** on p. 30.

Linear Architecture

Linear describes the *NMEA 2000* network as connected in a line. Assemble *NMEA 2000* networks using a “linear” architecture. Maintain the linear architecture whenever a t-connector, buss cable, or device is added.



***NMEA 2000* Network Linear Architecture** 008634

Number of Devices

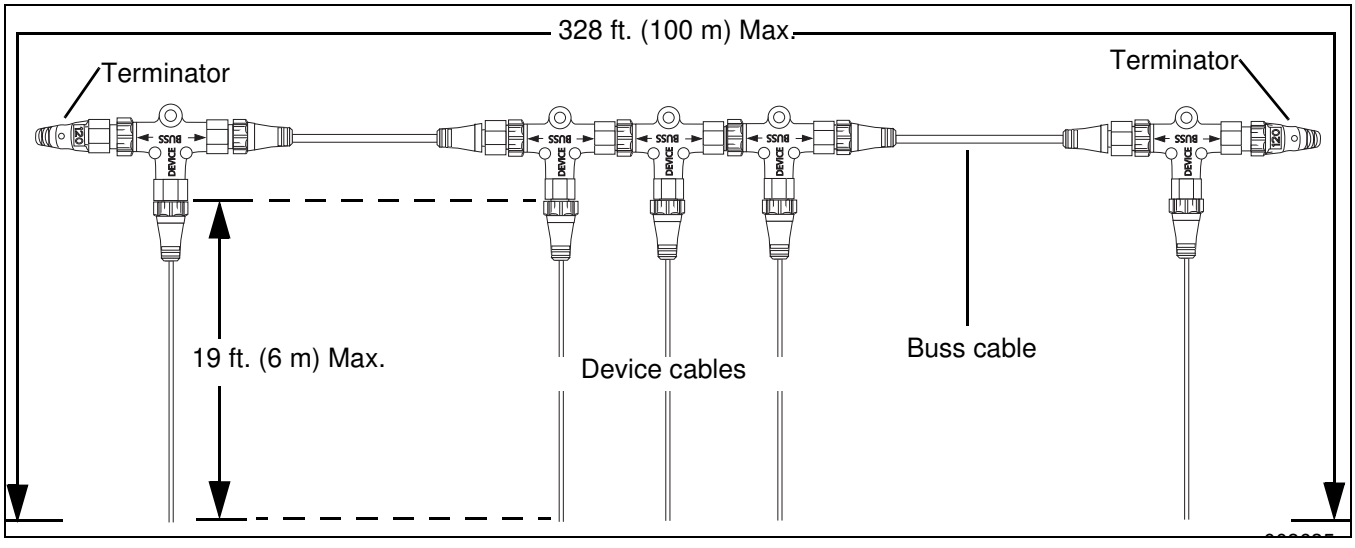
50 maximum.

Network Buss Length

328 ft. (100 m) maximum.

Device Cable Lengths

Individual device cable lengths: 19 ft. (6 m) maximum. Total device cable length: 256 ft. (78 m).



Refer to the current ***NMEA 2000* Network Guide**.

Boat Rigging

Table of Contents

Steering Systems

Mechanical Cables

Evinrude E-TEC G2 models with the TRAC+ midsection 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.

IMPORTANT: Use an hydraulic steering system with an external hydraulic steering cylinder to help provide firm steering control in high performance/high speed applications.

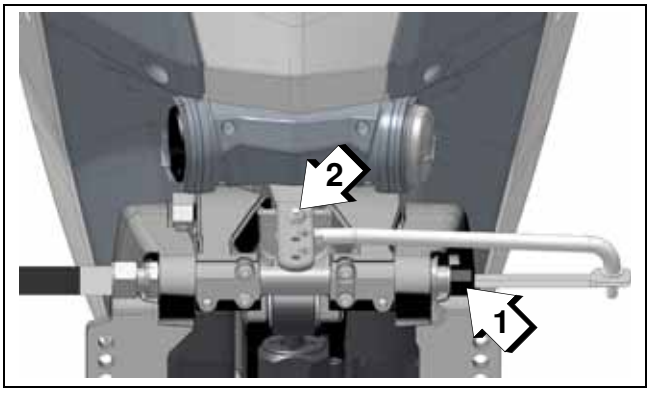
Extend the steering cable and lubricate the inner core before installation.

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

Drag Link

Use Steering Connector Kit, P/N 5009794, to allow full steering travel.

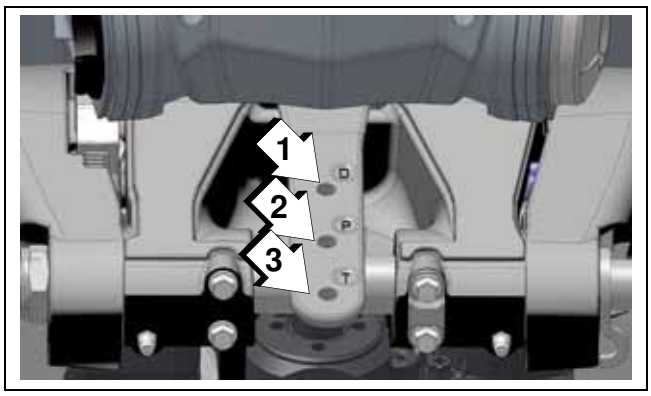
Install cable wiper nut on tilt tube and connect drag link to the correct location on the steering arm.



1. *Wiper nut*
2. *Drag link connection*

010215

For single outboard, single cable applications, the drag link should be installed in the rear hole.



1. *Rear Location (D)–Steering drag link connection*
2. *Middle Location (P)–Power steering connection (Refer to manufacturer's instructions for manual hydraulic steering systems.)*
3. *Front Location (T)–Bar connection (multiple outboard installations)*

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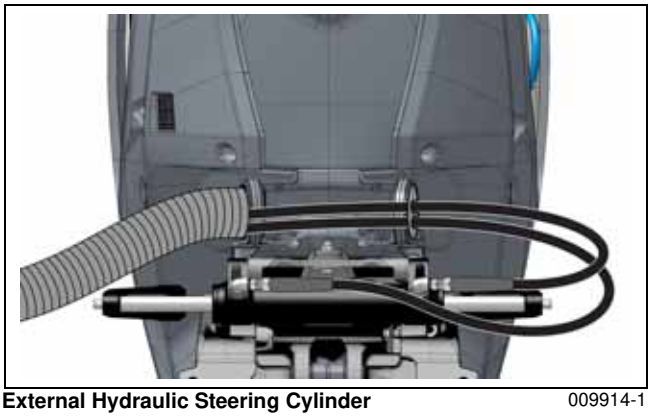
Hydraulic Steering

Hydraulic steering systems use hydraulic fluid to transfer motion and load from the helm to the outboard.

Use only a hydraulic steering system designed for the specific application. Refer to the steering system manufacturer's specifications for recommended applications.

TRAC+ Midsection

Evinrude E-TEC G2 models with the TRAC+ midsection are compatible with hydraulic steering systems which use an external hydraulic steering cylinder. Refer to **Outboard Rigging** on p. 59.



External Hydraulic Steering Cylinder 009914-1

Hydraulic Steering Fluid

Refer to **Filling and Bleeding the Hydraulic Steering System** on p. 76, for hydraulic fluid recommendations.

DPS Helm Compatibility

NOTICE

Use ONLY the helms listed in the Recommended Helm Charts on p. 25, when installing *Evinrude E-TEC G2* outboards.

Pro Series Helms

"Pro Series" helms are designed for use on high-performance boats capable of speeds in excess of 65 mph (105 kph) with a **single, non-power assisted** outboard up to 300 HP.

IMPORTANT: NEVER use *Ultraflex SVS* or *SeaStar Pro Series* helms in multiple outboard installations.

Other Helms

Helms provided by other manufacturers (for example *Mercury Marine Verado)* are NOT compatible with the hydraulic steering system of *Evinrude E-TEC G2* outboards.

Dynamic Power Steering System Improvements

Improvements have been made to the DPS system to support the *Evinrude i-Dock* steering system, *Pro Series* helms and three or four outboard installations.

Improvements (DPS-2) are effective beginning with:

- 74° V6 – AFA models
- 66° V6 – AAA models

IMPORTANT: Improvements also effect helm and outboard selection. Carefully review the following information:

DPS System Compatibility

AB 200 H.O. – 300 HP, 74° V6 ONLY

The DPS-1 system used on ABA model outboards is NOT compatible with the DPS-2 system used on 74° V6, AFA and newer model outboards.

Do NOT install ABA and AFA model DPS-equipped outboards on the same transom.

NOTICE

Do NOT use *Pro Series* helms with a DPS-equipped ABA model *Evinrude E-TEC G2* outboard.

Use of these helms with DPS-equipped ABA model will result in damage to the DPS power steering pump.

Pro-Series helms MAY be used in the following single engine, IHS *Evinrude E-TEC* 74° V6 **ABA** outboard models:

- E200LHOABA
- E225LHOABA
- E250LHOABA

AA & Newer 66° V6 and
AF & Newer 74° V6

Ultraflex SVS or *SeaStar Pro Series* helms may be used in single engine installations of the above model *Evinrude E-TEC G2* outboards.

IMPORTANT: Multiple outboard installations REQUIRE:

- correct outboard alignment
- steering position sensor calibration.

Refer to **Multiple Outboard Installations** on p. 89.

Helm Selection

To prevent steering system issues, it is important to select the correct helm.

From the **Helm Selection Chart**, find the engine application and the desired number of turns lock to lock for the helm.

When selecting turns lock to lock:
- a greater number of turns results in less steering effort and slower steering rate
- a lesser number of turns results in greater steering effort and quicker steering rate

Then read across the chart to find the helm displacement that matches the desired number of turns.

Helm Selection Chart

1 Engine	2 Engines	3 Engines	4 Engines	Helm Displacement (Per Steering Wheel Revolution)	
Turns Lock to Lock				in^3	cc
6.4	6.4	–	–	1.4	23.0
5.2	5.2	–	–	1.7	27.8
4.5	4.5	8.9	8.9	2.0	32.8
–	–	7.4	7.4	2.4	39.3
–	–	6.6	6.6	2.7	45.0
–	–	5.9	5.9	3.0	49.1

Next, use the **Recommended Helm Charts** on p. 25 to find a recommended helm that most closely matches the displacement listed in the **Helm Selection Chart**.

ALWAYS confirm the type of helm installed in the boat.

Recommended Helm Charts

Standard Series Helm Chart								
		Displacement		Pressure Relief		Mount	Helm P/N
Helms		in^3/rev	cc/rev	psi	kPa	Type	
SeaStar	1.4	1.4	23.0	1000	6895	Front	HH5269
SeaStar	1.4	1.4	23.0	1000	6895	Rear	HH5260
SeaStar	Classic Tilt	1.4	23.0	1000	6895	Tilt	HH6544
Ultraflex	UP25 F	1.5	25.0	1000	6895	Front	39618 R
Ultraflex	UP25 T	1.5	25.0	1000	6895	Tilt	40803 T
Mavimare	GM2-MRA01	1.7	27.0	1000	6895	Front	GM2-MRA01
SeaStar	1.7	1.7	27.8	1000	6895	Front	HH5271
SeaStar	1.7	1.7	27.8	1000	6895	Rear	HH5261
SeaStar	Classic Tilt	1.7	27.8	1000	6895	Tilt	HH6541
SeaStar	Sport Plus Tilt	1.7	27.8	1000	6895	Tilt	HH6491
Ultraflex	UP28 F	1.7	28.0	1000	6895	Front	39443 F
Ultraflex	UP28 T	1.7	28.0	1000	6895	Tilt	39445 K
Ultraflex	UP28 R	1.7	28.0	1000	6895	Rear	39970 F
Hydrive	401	1.7	28.0	1000	6895	Front	401
Hydrive	501	1.7	28.0	1000	6895	Front	501
Hydrive	402	2.0	32.8	1000	6895	Front	402
Mavimare	GM2-MRA03	2.0	32.0	1000	6895	Front	GM2-MRA03
SeaStar	2	2.0	32.8	1000	6895	Front	HH5273
SeaStar	2	2.0	32.8	1000	6895	Rear	HH5263
SeaStar	Classic Tilt	2.0	32.8	1000	6895	Tilt	HH6543
SeaStar	Sport Plus Tilt	2.0	32.8	1000	6895	Tilt	HH6445
Ultraflex	UP33 F	2.0	33.0	1000	6895	Front	39422 X
Ultraflex	UP33 T	2.0	33.0	1000	6895	Tilt	39446 M
Ultraflex	UP33 R	2.0	33.0	1000	6895	Rear	39969 X
Mavimare	GM2-MRA04	2.4	32.0	1000	6895	Front	GM2-MRA03
SeaStar	2.4	2.4	39.3	1000	6895	Front	HH5272
SeaStar	2.4	2.4	39.3	1000	6895	Rear	HH5262
SeaStar	Classic Tilt	2.4	39.3	1000	6895	Tilt	HH6542
SeaStar	Sport Plus Tilt	2.4	39.3	1000	6895	Tilt	HH6492
Ultraflex	UP39 F	2.4	39.0	1000	6895	Front	39415 A
Ultraflex	UP39 T	2.4	39.0	1000	6895	Tilt	39447 P
Ultraflex	UP39 R	2.4	39.0	1000	6895	Rear	39444 H
Ultraflex	UP45 F	2.7	45.0	1000	6895	Front	41276 B
Ultraflex	UP45 T	2.7	45.0	1000	6895	Tilt	41277 D
Ultraflex	UP45 R	2.7	45.0	1000	6895	Rear	41278 F

Pro-Series Helm Chart							
		Displacement		Pressure Relief		Mount Type	Helm P/N
Helms		in^3/rev	cc/rev	psi	kPa		
Hydrive	101 *	1.7	28.0	1500	10342	Mid	101
Hydrive	101-Tilt *	1.7	28.0	1500	10342	Tilt	101-Tilt
Hydrive	102 *	2.1	35.0	1500	10342	Mid	102
Hydrive	102 -Tilt *	2.1	35.0	1500	10342	Tilt	102-Tilt
Mavimare	GM2-MRA01X *	1.7	27.0	1500	10342	Front	GM2-MRA01X
Mavimare	GM2-MRA03X *	2.0	32.0	1500	10342	Front	GM2-MRA03X
Mavimare	GM2-MRA04X *	2.4	32.0	1500	10342	Front	GM2-MRA03X
SeaStar	Pro *	1.7	27.8	1500	10342	Front	HH5779
SeaStar	Pro *	2.0	32.8	1500	10342	Front	HH5770
SeaStar	Pro *	2.4	39.3	1500	10342	Front	HH5772
SeaStar	Pro Classic Tilt *	1.7	27.8	1500	10342	Tilt	HH6573
SeaStar	Pro Classic Tilt *	2.0	32.8	1500	10342	Tilt	HH6574
SeaStar	Pro Sport Plus Tilt *	1.7	27.8	1500	10342	Tilt	HH6489
SeaStar	Pro Sport Plus Tilt *	2.0	32.8	1500	10342	Tilt	HH6490
Ultraflex	UP28 F-SVS *	1.7	28	1500	10342	Front	41280 S
Ultraflex	UP33 F-SVS *	2.0	33	1500	10342	Front	41327 S
Ultraflex	UP39 F-SVS *	2.4	39	1500	10342	Front	41876 C
Ultraflex	UP28 T-SVS *	1.7	28	1500	10342	Tilt	41814 D
Ultraflex	UP33 T-SVS *	2.0	33	1500	10342	Tilt	41815 F
Ultraflex	UP39 T-SVS *	2.4	39	1500	10342	Tilt	41881 V

* See **DPS System Compatibility** and **AA & Newer 66° V6 and AF & Newer 74° V6** on p. 23.

Hydraulic Hose Selection

⚠ WARNING

Hydraulic hoses MUST meet the pressure rating of the helm. Use of hydraulic hoses with an inadequate pressure rating can result in hydraulic hose failure.

Hydraulic hose failure can cause loss of steering, resulting in damage to the boat and/or personal injury.

Select hydraulic hoses that meet or exceed the pressure rating of the helm. Refer to the **Recommended Helm Charts** on p. 25.

Hydraulic Hose Routing

⚠ WARNING

Continuous kinking chaffing, rubbing or twisting may eventually cause hydraulic hose failure.

Hydraulic hose failure can cause loss of steering, resulting in damage to the boat and/or personal injury.

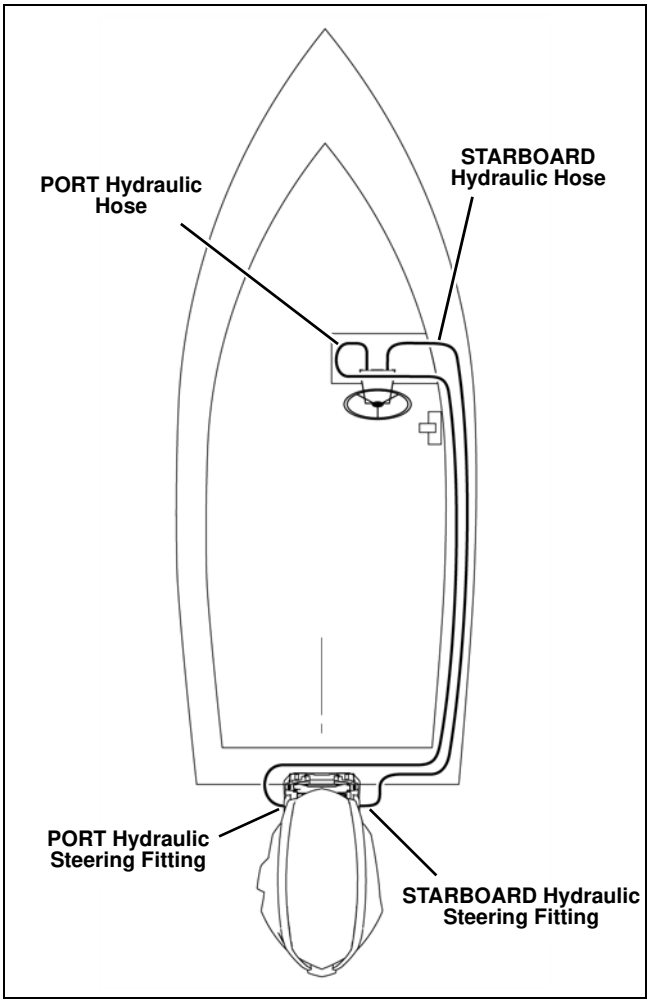
Inspect hydraulic hoses and fittings for wear damage or leaks.

Route hydraulic hoses from the helm to the outboard. Use a rigging tube or conduit to protect the hydraulic hoses from chaffing or other damage.

IMPORTANT: Do NOT remove protective caps from hydraulic fittings until connection of hose to helm and outboard is made

Hoses should be routed with a gradual rise from the helm, along the gunwale or through a rigging tube, to the outboard.

Do NOT bend hydraulic hoses tighter than a 2.5 inch (6 mm) radius.



Typical manual hydraulic steering 009086

Refer to **Hydraulic Hose Connections** on p. 66 for detailed information on hydraulic hose connections.

Remote Controls

⚠ WARNING

Remote controls 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 engine cut-off 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.

Refer to **Remote Control System Selection** on p. 16. An online Rigging Configurator is also available on *BOSSWeb*.

ICON II Remote Controls

Beginning with AFA model 200 H.O. – 300 HP, 74° V6 engines, the engine management software and *ICON II* remote control firmware has been updated to support *Evinrude i-Dock* steering.

Remote Control Firmware

Remote controls MUST have the firmware listed in the table below to function properly with the engines listed. Incorrect firmware will result in a no crank, no start situation.

***ICON II* Remote Control Type**	**Firmware**		
	AAA & Newer 66° V6	**ABA 74° V6**	**AFA & Newer 74° V6**
Concealed Side Mount	SW0252 RevE or higher	SW0252 Rev20A	SW0252 RevE or higher
Single Lever Binnacle Mount	SW0252 RevE or higher	SW0252 Rev20A	SW0252 RevE or higher
Dual Lever Binnacle Mount	SW0253 RevD or higher	SW0253 Rev16A	SW0253 RevD or higher

If installation of a new engine and remote control results in a no crank, no start situation, use *Evinrude Diagnostics* software v 6.1 or higher to determine the remote control firmware.

Refer to the installation instructions provided with the remote control to update the remote control firmware.

Remote Control Applications

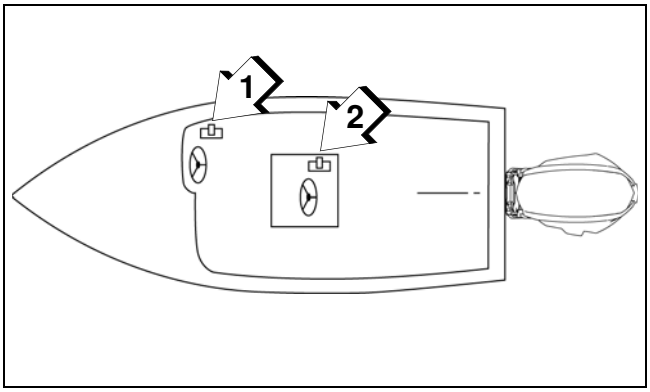
ICON II remote controls are designed for the following applications:

- Concealed side mount – Single outboard, single station applications only.
- Foot throttle (optional) – Accessory for use with the concealed side mount control only. NOT for use with binnacle mount remote controls.
- Single lever binnacle mount – Single outboard, single or dual station applications.
- Dual lever binnacle mount – Two, three or four outboard, single or dual station applications.

Remote 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.

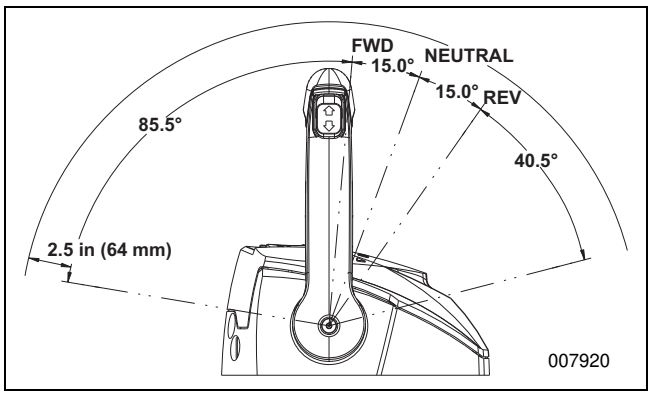


1. Side console
2. Center console
009134

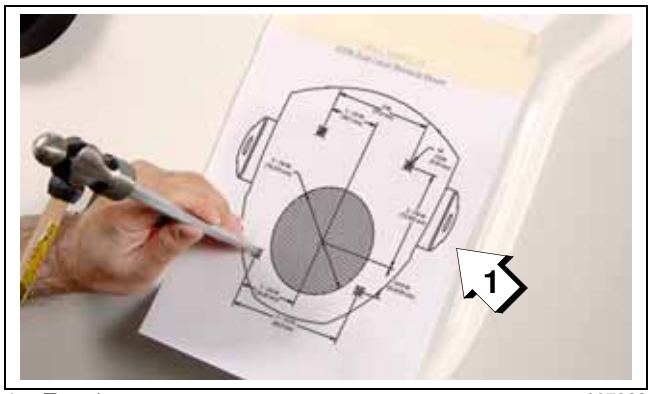
IMPORTANT: The mounting location must be a flat surface and must be strong enough to provide rigid support. Strengthen mounting surface as necessary.

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 2.5 in. (64 mm)

of clearance between the handle and any part of the boat throughout the control lever travel.



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



1. Template 007922

Install control with hardware provided.

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

NOTICE

Do not connect boat accessories to the key switch of an *ICON II* system. Connecting accessories to the key switch can cause low current, resulting in erratic operation of the remote control system.

When installing an electronic shift and throttle network, remember:

- Use the Accessory Power Connector provided on the digital control harness – do NOT use the key switch to power accessories (switched B+).
- Accessories connected to the accessory power connector should not exceed 5 amps.
- Use Y-Harness, P/N 587230, in applications requiring multiple accessories.

Y-Harness, P/N 587230 587230

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
150 – 200 HP, 66° V6 200 H.O.–300 HP, 74° V6	675 CCA (845 MCA), **or** 800 CCA (1000 MCA) below 32°F (0°C) 107 amp-hr in extreme applications

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

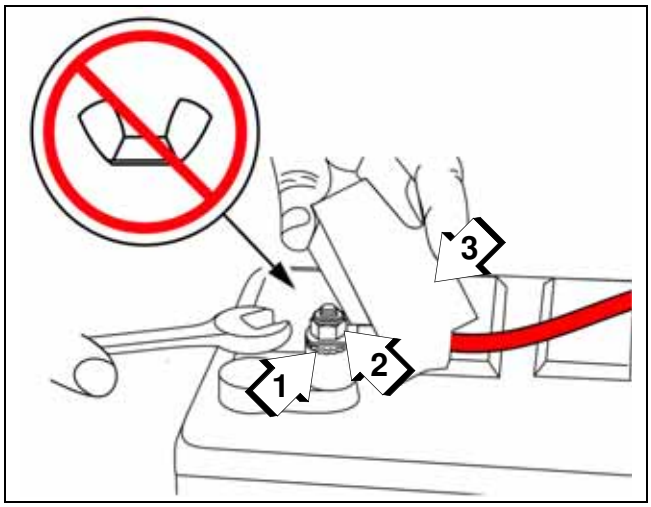
Keep the battery connections clean, tight, and insulated to prevent their shorting or arcing and causing an explosion. If the battery mounting system does not cover the connections, install protective covers. Check often to see that connections stay clean and tight.

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

NOTICE

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

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 009166
1. *Starwasher*
2. *Hex nut*
3. *Terminal Insulator*

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

Battery Cable Requirements

Battery cables are NOT shipped with the engine. Order standard or extended length battery cables require an increased wire size. Refer to the following table.

Cable Length	Gauge	P/N
10 Ft. (3 m)	4	587205
15 Ft. (4.6 m)	2	587301
20 Ft. (6.1 m)	2	587302

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.

Battery Switches and Multiple Batteries

NOTICE

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

NOTICE

The negative (–) terminals of a multiple 12-volt battery installation must be connected together.

A multiple battery setup, including marine battery selector switches, can provide flexibility in single and dual outboard installations.

Refer to **Battery and Switch Wiring Diagrams (Typical)** on p. 34 for battery connection options.

The battery selection function can be used for emergency starting if a primary battery becomes discharged.

The OFF position of the battery selector switch can be used to minimize battery discharge during periods of non-use.

Typical battery functions

Primary
- Used as starting battery under normal operating conditions.
- Red (+) cable connected to battery switch.
- Primary battery is charged by connection to main red (+) outboard battery cable.

Dual outboard installations can utilize the opposing outboard's primary battery as a secondary battery for emergency starting only.

Secondary
- Used as back-up starting battery under abnormal operating conditions.
- Red (+) cable connected to battery switch.
- Secondary battery is charged independently from primary battery.

Accessory
- Not used as starting battery.
- Isolated from outboard start function.
- No red (+) cable connected to battery switch.

Secondary and accessory batteries are often charged by an isolated battery charging circuit. Refer to **Auxiliary Battery Charging** on p. 32.

Battery Switch Requirements

Battery switches must meet the following requirements.
- The switch must be approved for marine use.
- The switch should be a "make before break" design.
- Switch amperage rating should be adequate for the outboard it will be used on.
- Use one battery switch for each outboard installed.
- Use appropriately sized wire and terminals.
- Use AWG stranded copper wire.

Battery Switch Location

- Locate battery switch as close to the batteries as possible.
- Locate switch so that it cannot be accidentally bumped or switched.
- Refer to the battery switch manufacturer's installation instructions.
- Fasten all battery switches to solid surfaces.
- Route wiring as directly as possible.

- Support the battery switch as needed to prevent abrasion.
- Use appropriate wiring and connectors.
- Seal all connections and terminals with liquid neoprene to prevent corrosion.

Battery Switch Operation

- Select the primary battery for normal operation.
- Secondary batteries should only be selected for emergency starting.
- ALL or BOTH switch position is for emergency starting only.

Provide operator with the documentation supplied by the battery switch manufacturer. Make sure that the operator is informed of proper battery switch operation.

Auxiliary Battery Charging

NOTICE

Never connect an external battery isolator to the stator of an *Evinrude E-TEC G2*.

NOTICE

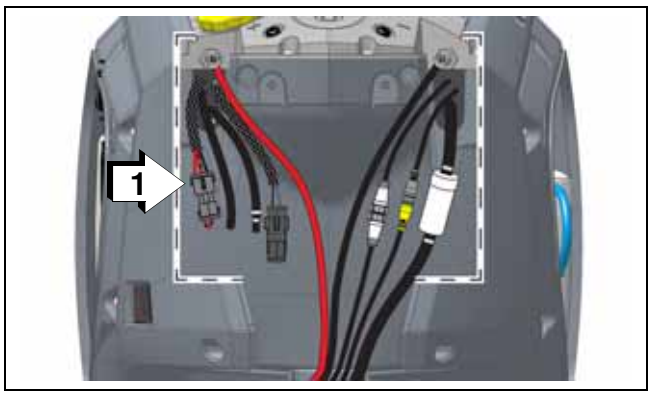
The accessory charging kit must never be connected to any battery of a 24-volt electrical system.

Evinrude E-TEC G2 outboards are equipped with isolated battery charging capability. The isolated charge connection must only be used to charge a single 12-volt battery or two 12-volt batteries wired in parallel.

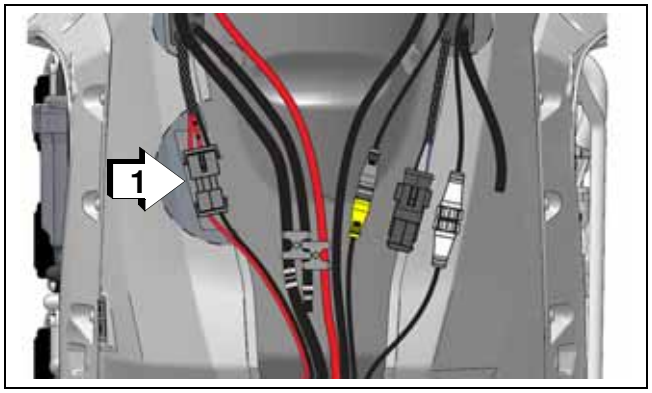
The auxiliary battery charging kit provides a maximum of 25 Amps to the auxiliary battery.

Accessory Charge Lead Kit, P/N 5009079, is routed from a connector on the outboard's electrical harness to the accessory battery.

If installed, store the connector in the location shown.



150 - 200 HP Models 009940
1. Connector storage location

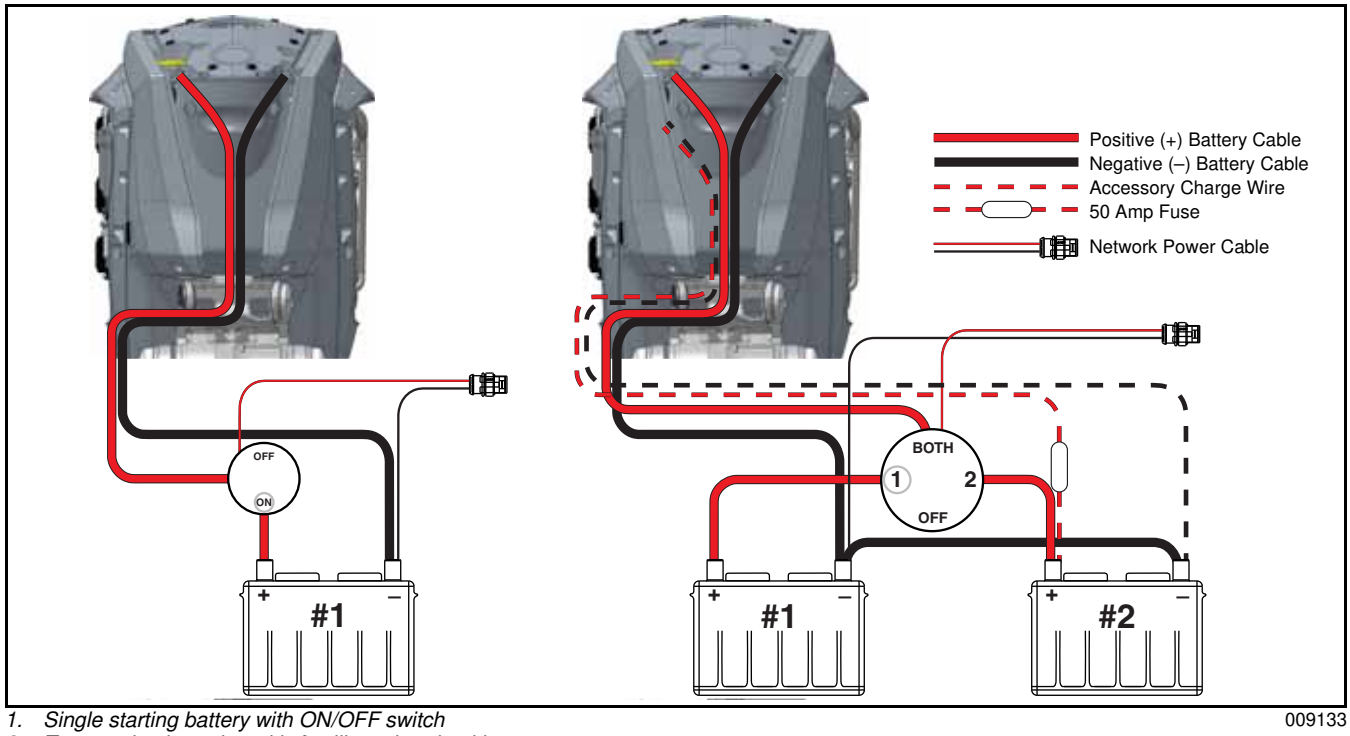


200 H.O. - 300 HP Models 009172
1. Connector storage location

Refer to **Rigging Center Connections,74° V6 Models** on p. 70

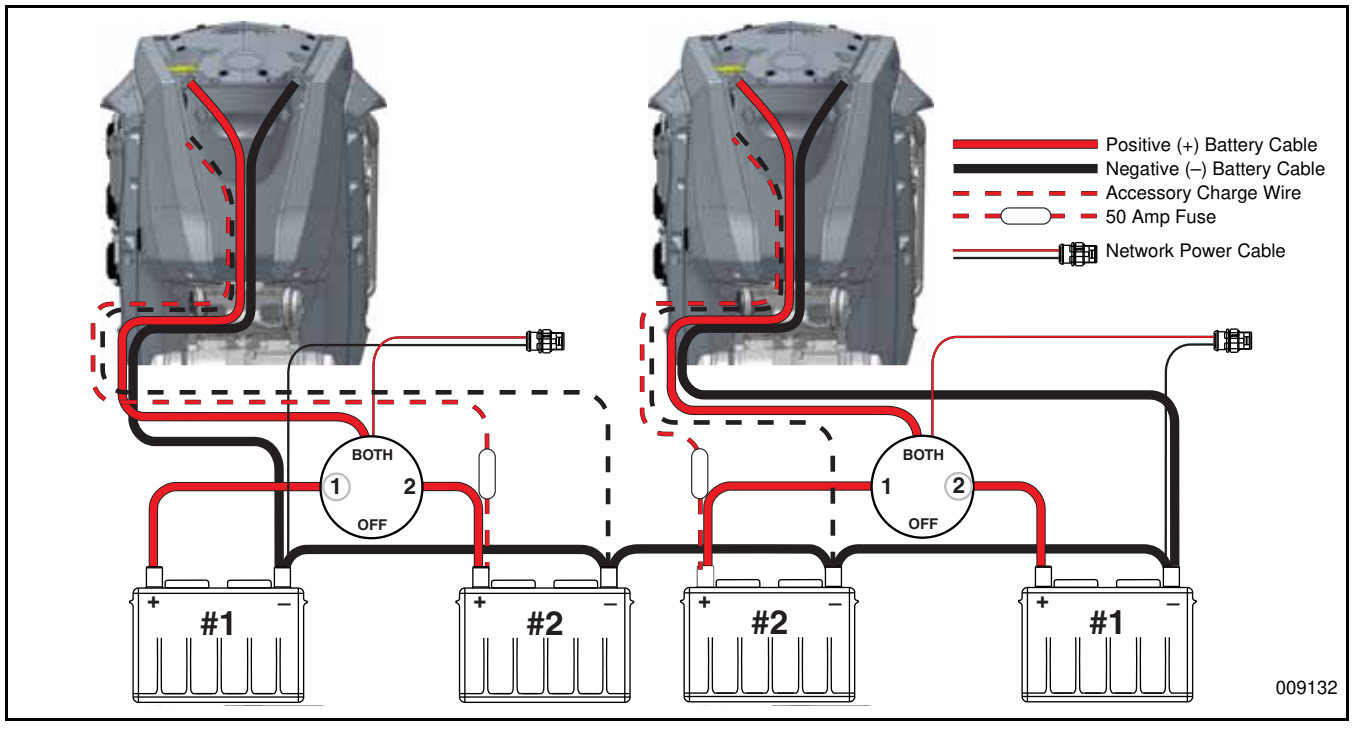
Battery and Switch Wiring Diagrams (Typical)

Single outboard

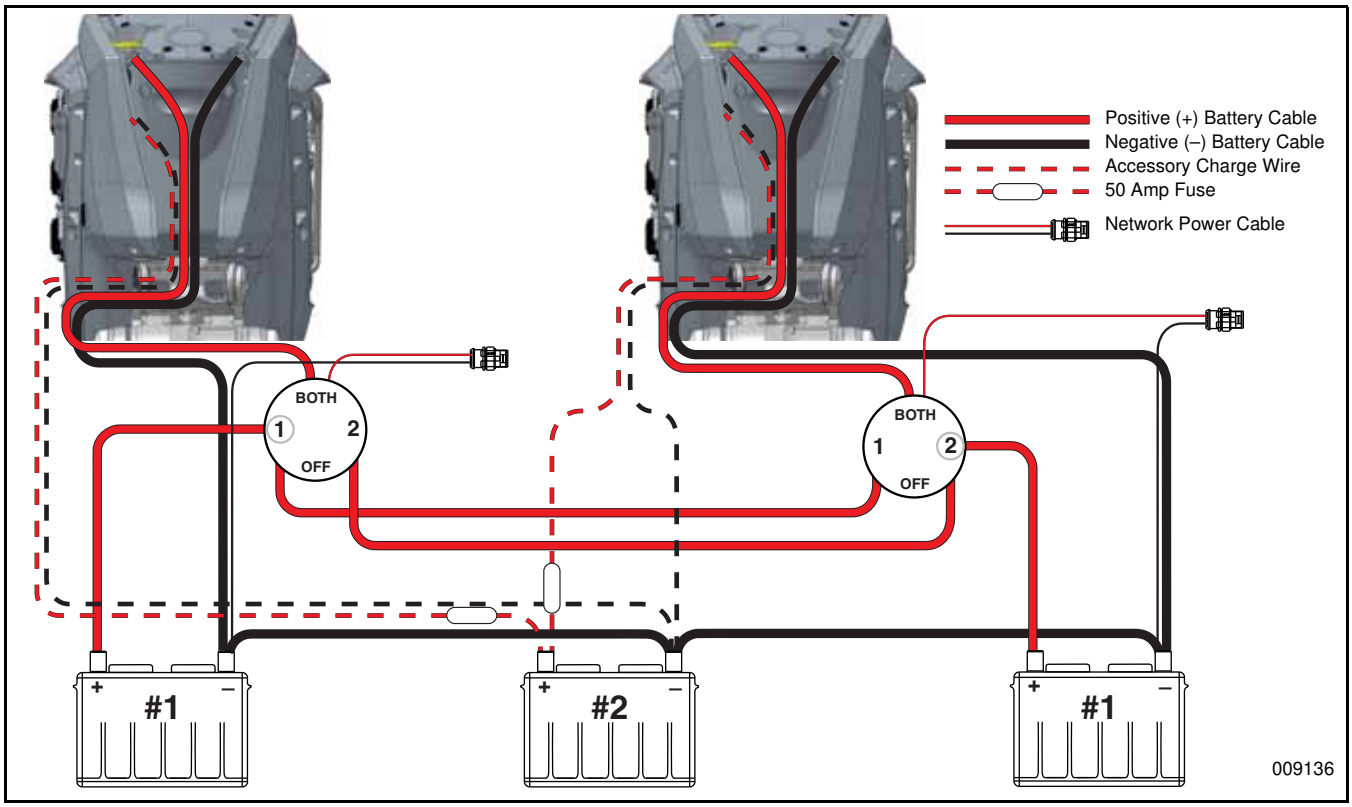


1. *Single starting battery with ON/OFF switch*
2. *Two starting batteries with Auxiliary charging kit*

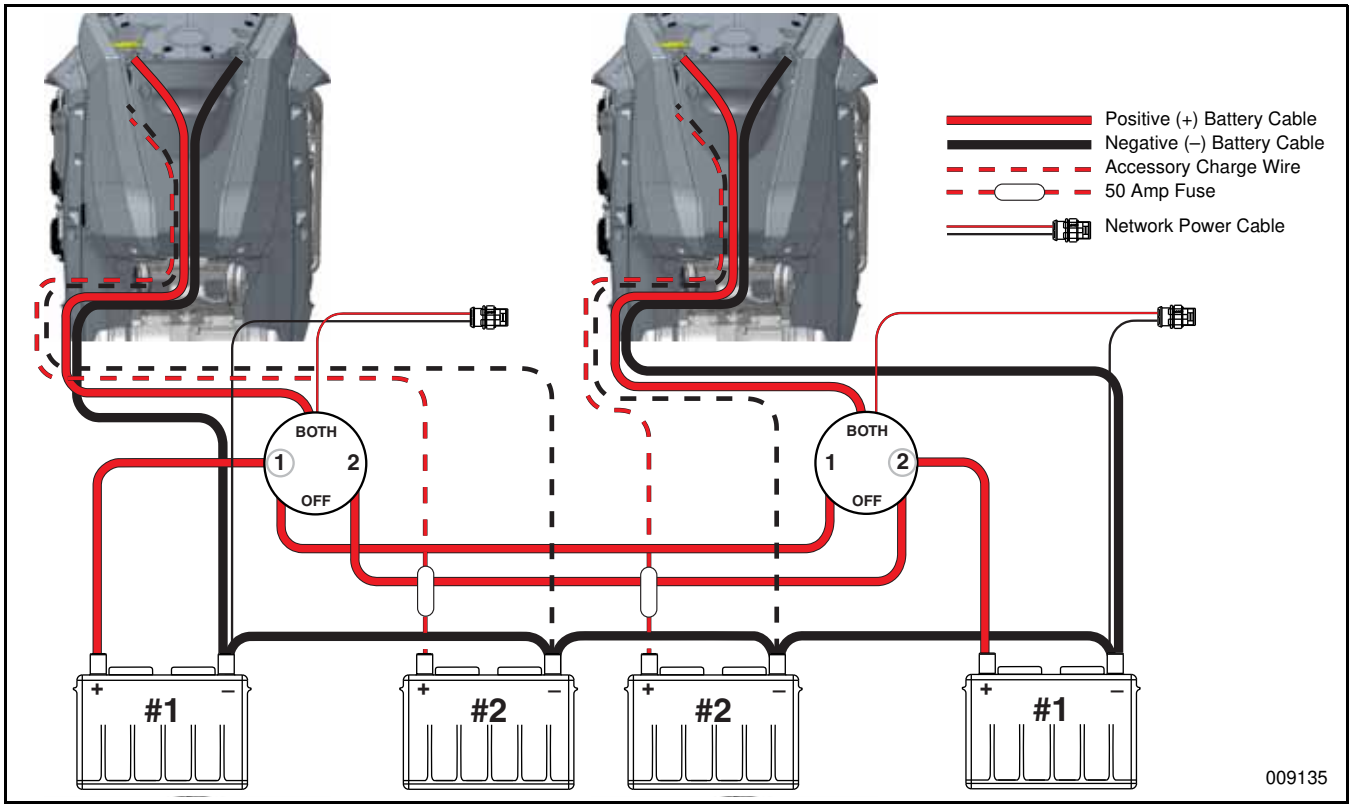
Two outboards: One starting battery, one accessory battery each



Two outboards: One primary battery each; one isolated accessory battery



Two outboards: One primary battery each; two isolated accessory batteries



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
- 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

NOTICE

Do not use portable fuel tanks for outboards larger than 115 HP. Inadequate fuel flow to high horsepower outboards can result in serious powerhead damage.

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*
2. *Date code*

007944

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 Filters

NOTICE

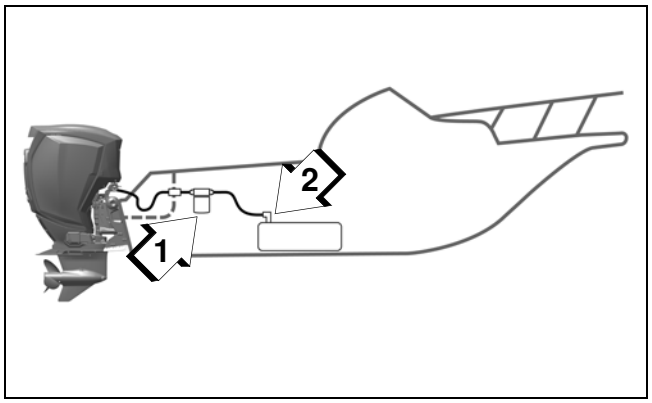
Avoid using in-line fuel filters external to the outboard. The filter area and flow characteristics may not be adequate for high horsepower outboards.

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

174176



Typical Fuel Supply Configuration 009087
1. *Water separating fuel filter*
2. *Anti-siphon valve, in fuel pick-up of tank*

Fuel Flow Requirements

	150 – 300 HP
Fuel tank pickup tube; minimum ID	3/8 in. (9.5 mm)
Fuel fittings; minimum ID	9/32 in. (7.1 mm)
Fuel supply hoses; minimum ID	3/8 in. (9.5 mm)
Fuel tank pickup screen	100 mesh, 304 grade stainless steel wire, 0.0045 inch (0.1143 mm) wire diameter, 1 inch (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

Accessory Remote Oil Tank

The following optional accessory remote oil tank kits are available:

1.8 gal. (6.8 liters), P/N 5008571
3.0 gal. (11.3 liters), P/N 5008572

An accessory Oil Tank Pick-up Kit, P/N 767686, is also available for the 10 gallon (37.8 liters) capacity oil tank.

Refer to the *Evinrude Genuine Parts* catalog to order.

Follow the installation instructions provided with the remote oil tank kits.

NOTICE

Consider the installation location of the remote oil tank carefully. The oil tank is vented to the atmosphere. To avoid serious powerhead damage, be sure the oil tank is installed in a location that does not allow constant exposure to sunlight, rain, bilge water or spray.

If installing the optional remote oil tank, select a mounting location that provides:

- A solid place to mount the tank
- A dry location that prevents exposure to rain or spraying water
- Access for adding oil
- Interference-free hose and wire routing to outboard.

If necessary, the oil tank can be mounted further from the outboard than the supplied hoses and harness allow.

NOTICE

Do not exceed a maximum of 25 ft. of oil hose to the outboard.

Oil Hose Routing

Route oil hose through the rigging hose. Use the most direct path to route the oil hose from the oil tank to the outboard.

Accessory Remote Oil Fill Kit

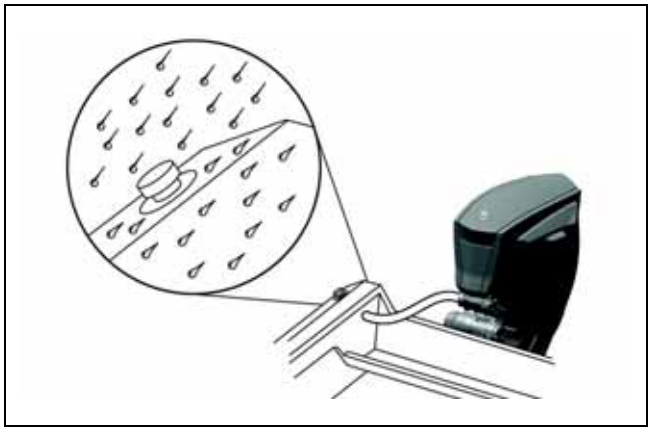
The remote oil fill kit (P/N 176461) provides a deck-mounted fill tube, cap, a tank-mounted tube, and nut that replace the original oil tank cap assembly.

Installation Recommendations

NOTICE

A slanted area of the deck will allow water to drain away from the fill and is best suited for the installation.

- Select a location on the deck of the boat that is above the oil tank fill cap.
- Select a deck location which allows the required length of 1½ in. I.D. fill hose to route as directly and as vertically as possible.
- Avoid inappropriate hose routings that could distort the fill tube or tank tube.
- Refer to installation instructions provided with remote oil fill kit.



009089

Additional Items Required

- 1½ in. I.D. fill hose cut to required length. Fill hose (P/N 123956) is available in 25 ft. (7.6 m) lengths.
- Two corrosion resistant 2 in. (50 mm) hose clamps.

Cable and Hose Installation

NOTICE

A 12 in. (304.8 mm) or longer length of rigging hose such as P/N 770392, or P/N 770393 is REQUIRED to prevent damage to buss cables, hoses, harnesses or other wiring entering the outboard rigging center.

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

- Buss cables and hubs
- Instrument harnesses
- Battery cables and switches
- Oil tank sender harness
- Fuel supply hose
- Oil supply hose.
- Throttle and shift cables

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

- Mechanical water pressure gauge hose
- Accessory battery charging

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.

Buss Cable, Hose and Harness Routing

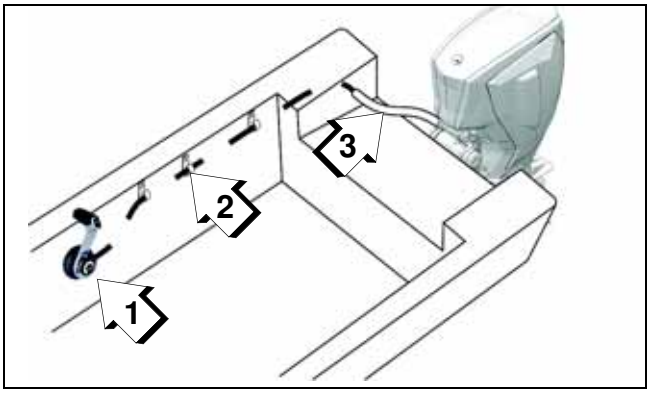
⚠ WARNING

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

Prevent damage to buss cables, hoses, harnesses or other wiring. Route buss cables, hoses and harnesses through a rigging conduit or along a protected path from the helm to the rear of the boat.

Mount cable and harness connections in a dry location, away from bilge and motor well areas.

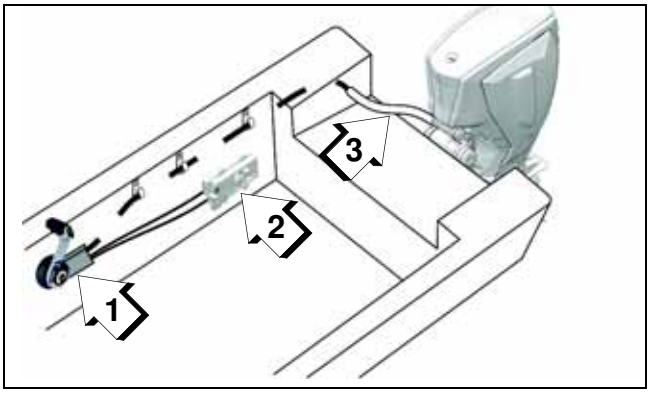
Route hoses through a rigging hose to the engine. Refer to **Rigging Hose** on p. 40.



1. *Concealed side-mount remote control* 009090
2. *Cable support*
3. *Rigging hose*

Control Cable Routing

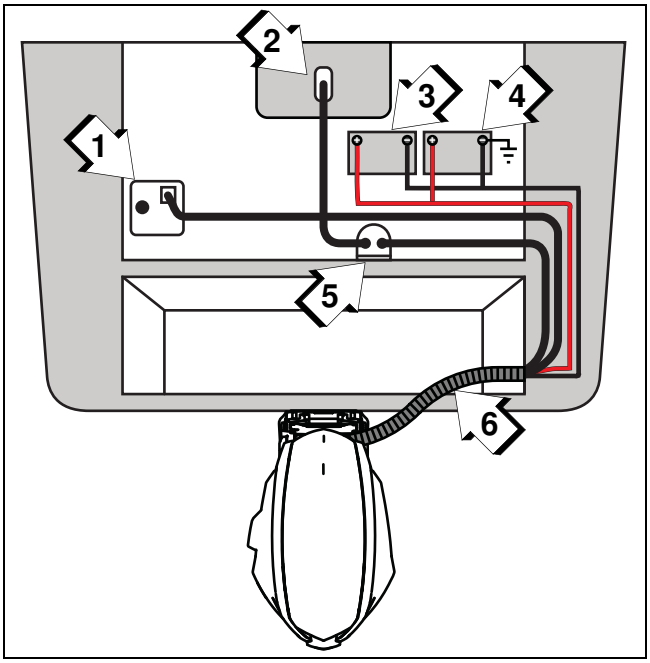
If a mechanical remote control is used, route control cables from the remote control to the Universal Control Module (UCM).



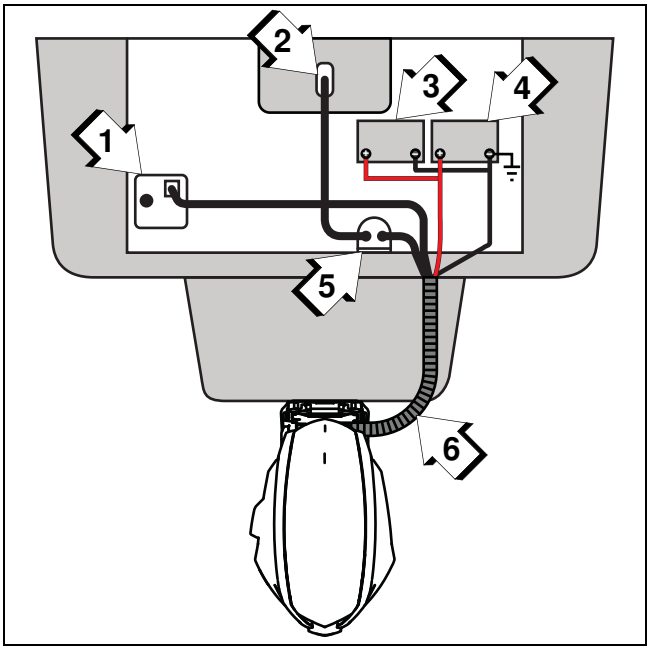
1. *Concealed side-mount remote control* 009091
2. *UCM*
3. *Rigging hose*

Secure all cables, hoses and harnesses with cable supports to prevent movement or damage.

Buss cables, wiring, hoses and control cables should follow a similar path. Select the best routing for the specific application.



Typical Outboard Installation 009092
1. *Remote oil tank (optional)*
2. *Anti-siphon valve*
3. *Starting battery*
4. *Accessory battery*
5. *Water separating fuel filter*
6. *Rigging Tube*



Typical Engine Bracket Installation 009093
1. *Remote oil tank (optional)*
2. *Anti-siphon valve*
3. *Starting battery*
4. *Accessory battery*
5. *Water separating fuel filter*
6. *Rigging Tube*

Buss Cables

Route buss cables from the boat through a rigging hose into the rigging center. Refer to **Rigging Center Connections,74° V6 Models** on p. 70.

Battery Cables

Route cables from the boat through a rigging hose into the rigging center. Refer to **Rigging Center Connections,74° V6 Models** on p. 70.

Fuel Hose

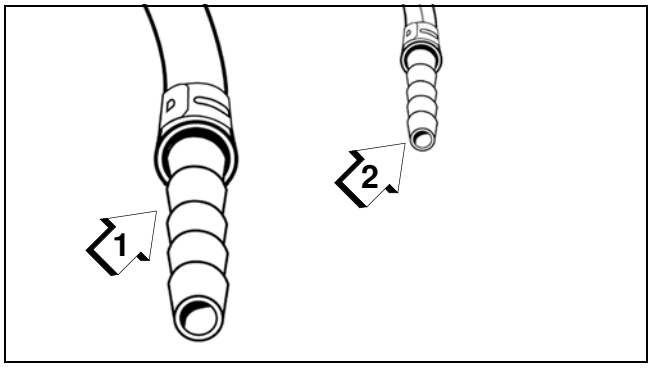
Route the fuel hose from the boat through a rigging hose into the rigging center. 74° V6 models do not require a primer bulb.

Refer to **Rigging Center Connections,74° V6 Models** on p. 70.

Oil Supply Hose

If installing an optional remote oil tank, route the oil supply hose from the boat through a rigging hose into the rigging center.

Refer to **Rigging Center Connections,74° V6 Models** on p. 70.

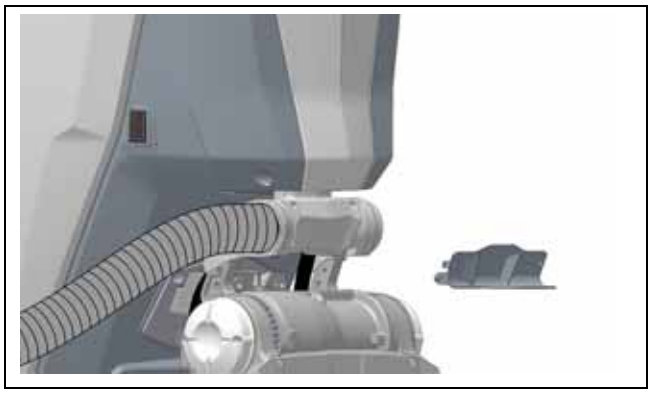


1. *Fuel supply hose and fuel fitting - 3/8 in. (9 mm)* 003963
2. *Oil supply hose and fitting - 1/4 in. (6 mm)*

Rigging Hose

Make sure all cables, wiring, and hoses have been identified and fitted to the appropriate lengths. Refer to **Outboard Rigging** on p. 59.

Next, bundle the components that route to the outboard with a rigging hoses such as P/N 770392, or P/N 770393, or other flexible conduit.



Rigging Hose Installation 009094

Oetiker Clamp Servicing

⚠ WARNING

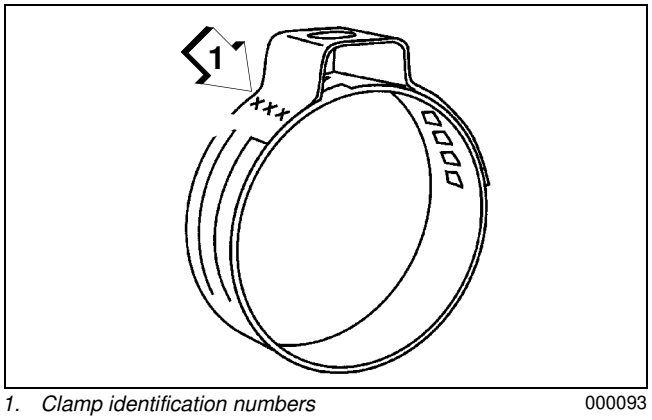
DO NOT re-use Oetiker clamps. Fuel leakage could contribute to a fire or explosion.

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 **Oetiker Clamp Chart** on p. 43 chart for clamp dimensions.



1. Clamp identification numbers 000093

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.

Refer to **Oetiker Clamp Chart** on p. 43.

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.

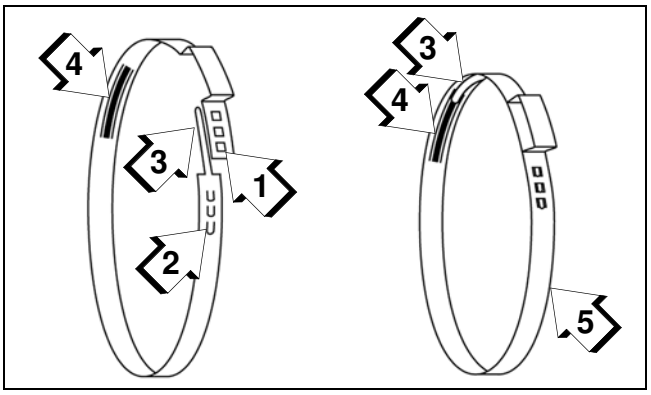
IMPORTANT: Use only *Oetiker* recommended tools to close *Oetiker* stepless clamps.

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

DP0886

- Position correct size clamp over hose.
- Install hose on fitting.

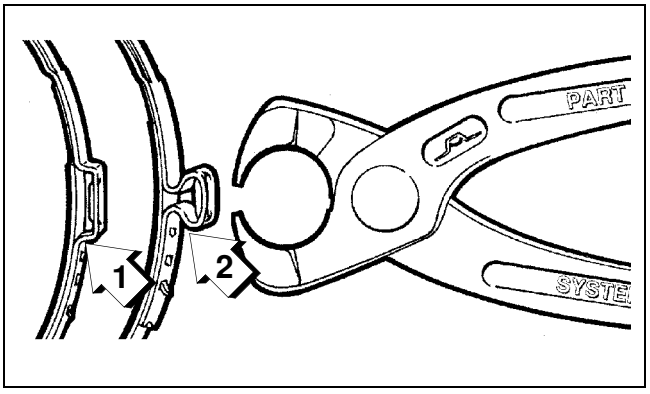
Larger size *Oetiker* clamps may come apart during handling. To reassemble the clamp, connect the end loop to the end hook. Make sure the alignment tab is installed into the alignment slot.



009095

1. *End loop*
2. *End hook*
3. *Alignment tab*
4. *Alignment slot*
5. *Correctly assembled clamp*

- Close clamp ear fully with *Oetiker* pincers (pliers).

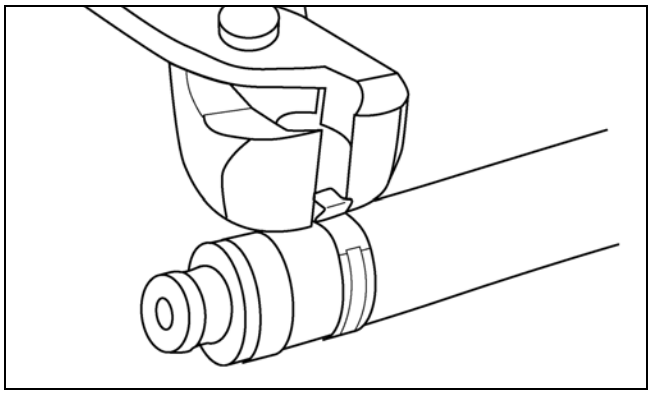


000092

1. *Open clamp*
2. *Closed clamp*

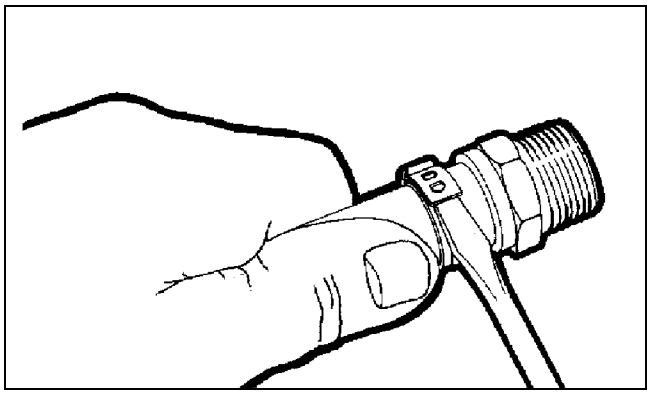
Clamp Removal

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



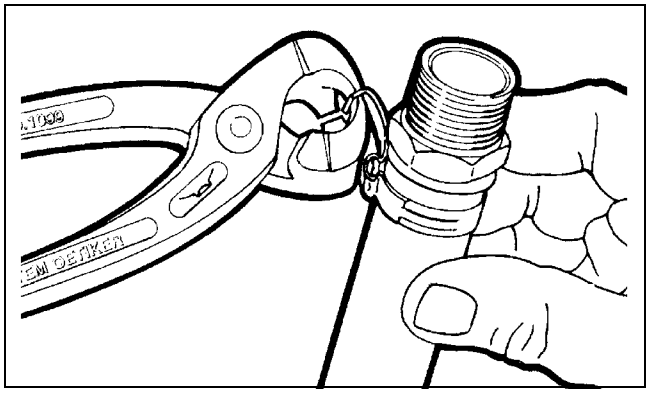
000108

Method 2: Lift end of stepless clamp with screwdriver.



000090

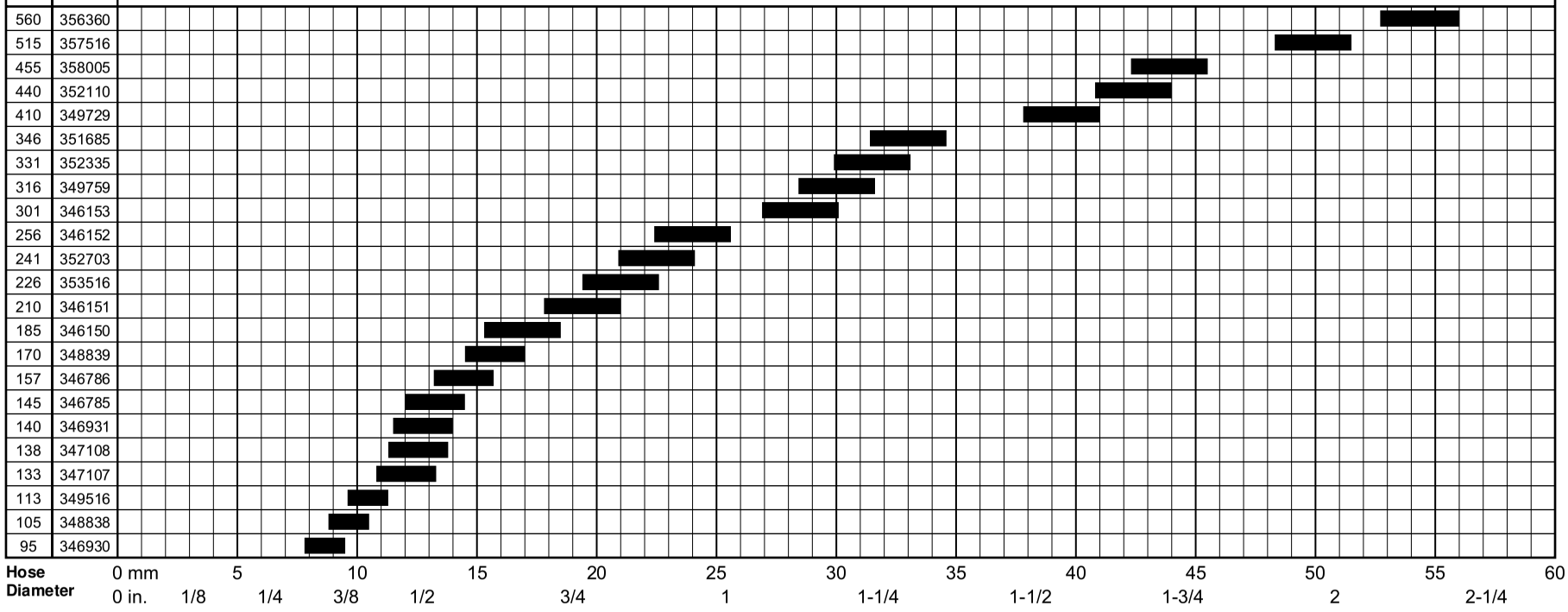
Method 3: Use *Oetiker* pincers (pliers) to grip clamp. Pull clamp off of connection and discard.



000091

Oetiker Clamp Chart

I.D.	P/N
560	356360
515	357516
455	358005
440	352110
410	349729
346	351685
331	352335
316	349759
301	346153
256	346152
241	352703
226	353516
210	346151
185	346150
170	348839
157	346786
145	346785
140	346931
138	347108
133	347107
113	349516
105	348838
95	346930



Extra–Large Clamps

I.D.	P/N	
995	356019	96.3 to 99.5 mm (3.79 to 3.92 in.)
845	358657	81.3 to 84.5 mm (3.20 to 3.32 in.)
695	352868	66.3 to 69.5 mm (2.61 to 2.73 in.)
605	351159	57.3 to 60.5 mm (2.25 to 2.38 in.)

008458 Rev E.

Notes

Technician's Notes

Related Documents

Bulletins	
Instruction Sheets	
Other	

Outboard Installation

Table of Contents

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

⚠ WARNING

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

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.

NOTICE

***Evinrude E-TEC G2* models provide built in set-back, compared to previous models. Make sure the transom can support the additional set-back.**

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.

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 and Jack Plates

NOTICE

To prevent damage to outboard, check installation frequently for:

- **Loose mounting bolts and nuts**
- **Elongated mounting holes**
- **Bent or deformed washers**

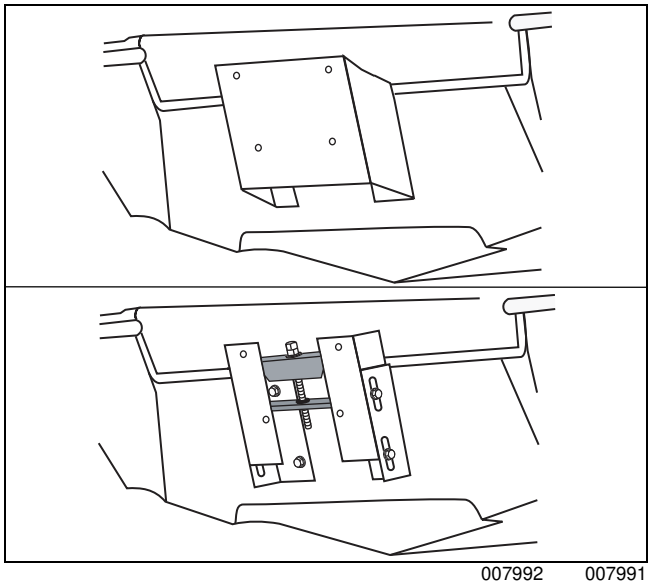
Replace any hardware that fails to maintain torque specifications.

When mounting an outboard on a jack plate:

- Refer to the manufacturer's recommendations for maximum weight and horsepower.
- The jack plate must provide a rigid, one-piece mounting assembly—either a solid surface, or surfaces adequately connected to prevent flexing or twisting.
- DO NOT use a jack plate constructed in two separate pieces—lack of support can twist the stern brackets, wear tilt tube bushings and thrust rollers, and bend or break components.

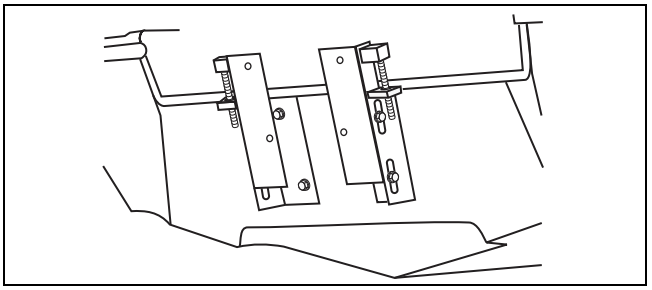
IMPORTANT: Damage caused by use of a two-piece jack plate or unstable mounting surface will not be covered by warranty.

Recommended Designs



007992 007991

Not Recommended



DR5703

Whenever possible, use mounting hardware supplied with the outboard to install jack plate on transom. Tighten to a torque of 40 ft. lbs. (54 N·m).

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.

Part Number	Length (inches)	Thread Size	Proof Load Minimum (lbs.)
336676	4.75	1/2-13	12,771
331578	5	1/2-13	18,520
354101	6	1/2-13	18,520
354102	7	1/2-13	18,520
354103	8	1/2-13	18,520
354104	9	1/2-13	18,520

Outboard mounting bolts, backing plates, washers, and nuts are used to attach the outboard to the shipping pallet. If alternate bolt lengths or replacement parts are required, use only *Evinrude Genuine Parts.*

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

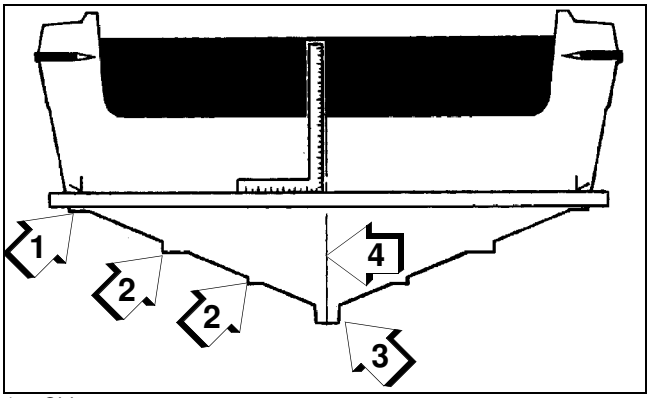
Transom Measuring and Drilling

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

Multiple Outboard Centerlines

Evinrude E-TEC G2 outboards require centerline spacing of:

Outboard Model	Centerline
150 – 200 HP 66° V6	27.5 in. (698.5 mm)
200 H.O.–300 HP 74° V6	28 in. (711 mm)

Some applications may require changes in this dimension to avoid strakes, to adjust for transom height, or for performance reasons. Best performance can be determined only through testing. Refer to boat manufacturer for recommendations.

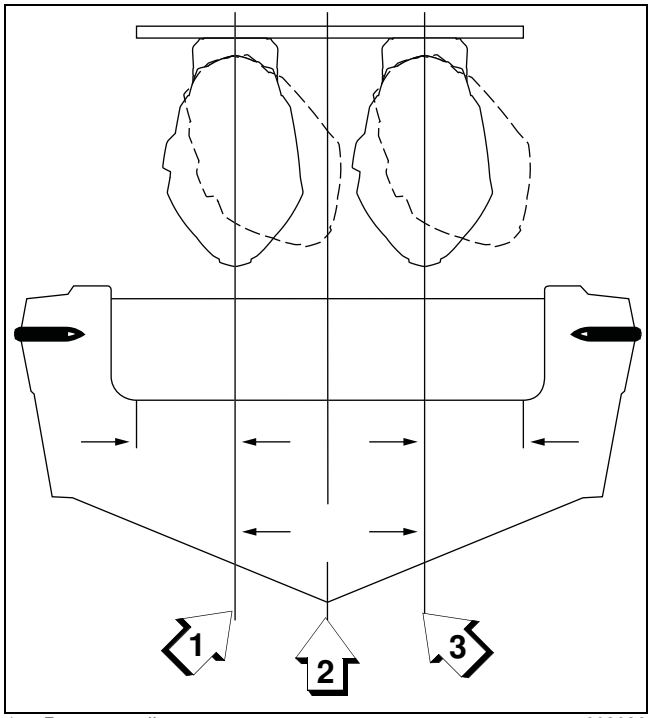
Increase the spacing if the standard spacing does not allow full steering travel in a particular installation.

The top edge of the transom should be more than twice the width of the dual-outboard centerline spacing dimension. Bracket installations may not require this consideration.

Measure the transom for dual-outboard spacing after the centerline of the hull is established.

Divide the spacing dimension by two. Use the resulting number to space the outboard centerlines from the hull centerline.

EXAMPLE: A 28 in. (771 mm) dual-outboard spacing would result in two outboard centerlines, each 14 in. (355 mm) from the hull centerline.



1. *Port centerline*
2. *Hull centerline*
3. *Starboard centerline*

009096

Transom Height

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

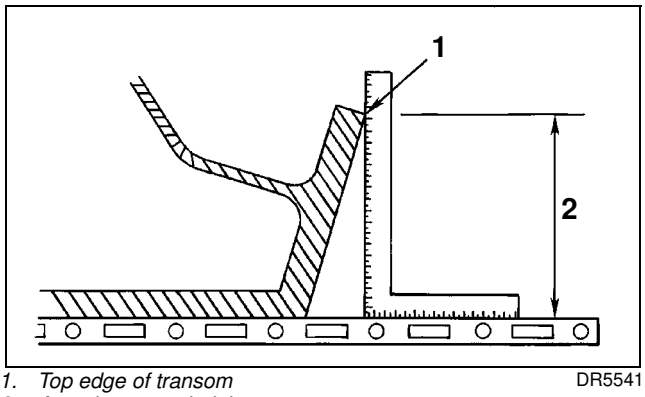
- A 19 to 21 in. (48.3 to 53.3 mm) transom height uses a 20 in. (50.8 mm) shaft outboard.
- The shaft length of the outboard being installed should come close to matching the transom height of the boat.
- Refer to **SPECIFICATIONS** in outboard Operator's Guide for transom height.

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

For dual-outboard installations, transom height should be measured at the outboard centerlines.

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

Transom Drilling Locations

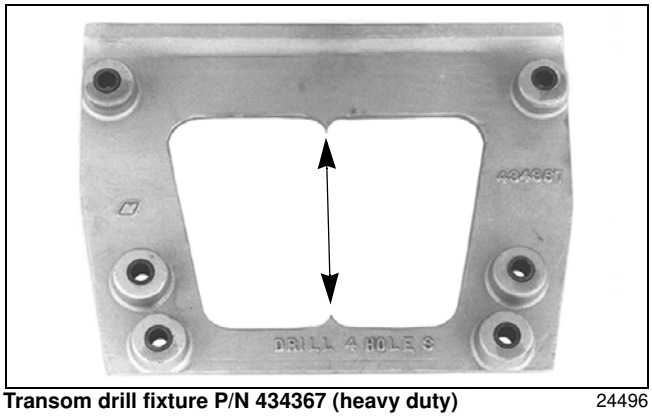
NOTICE

Maintain at least 1.75 in. (45 mm) of transom surface above the top mounting bolts.

All models use the standard ABYC 4-Bolt mounting pattern.

Use Transom drill fixture, P/N 434367 or P/N 385368, as a guide for correct hole placement. If drill fixture is unavailable, refer to **Drilling and Hardware Diagrams** on p. 50 for measurements.

Position drill fixture on top of transom or bracket and align indicator points with centerline.



Transom drill fixture P/N 434367 (heavy duty) 24496

The indicators are affected by the squareness of the top edge of the transom. If either side of the fixture must be raised more than ¼ in. (6 mm) above the transom's top surface to make both indicators align, the transom must be modified.

IMPORTANT: DO NOT assume that the top edge of the transom is straight. Position the drill fixture based on measurements aligning it to the bottom of the hull.

Before drilling any mounting holes:

- Make sure the hole locations provide enough clearance for mounting bolts and washers.
- Check the inside area of the transom for obstructions.
- Check transom height(s) at centerlines.

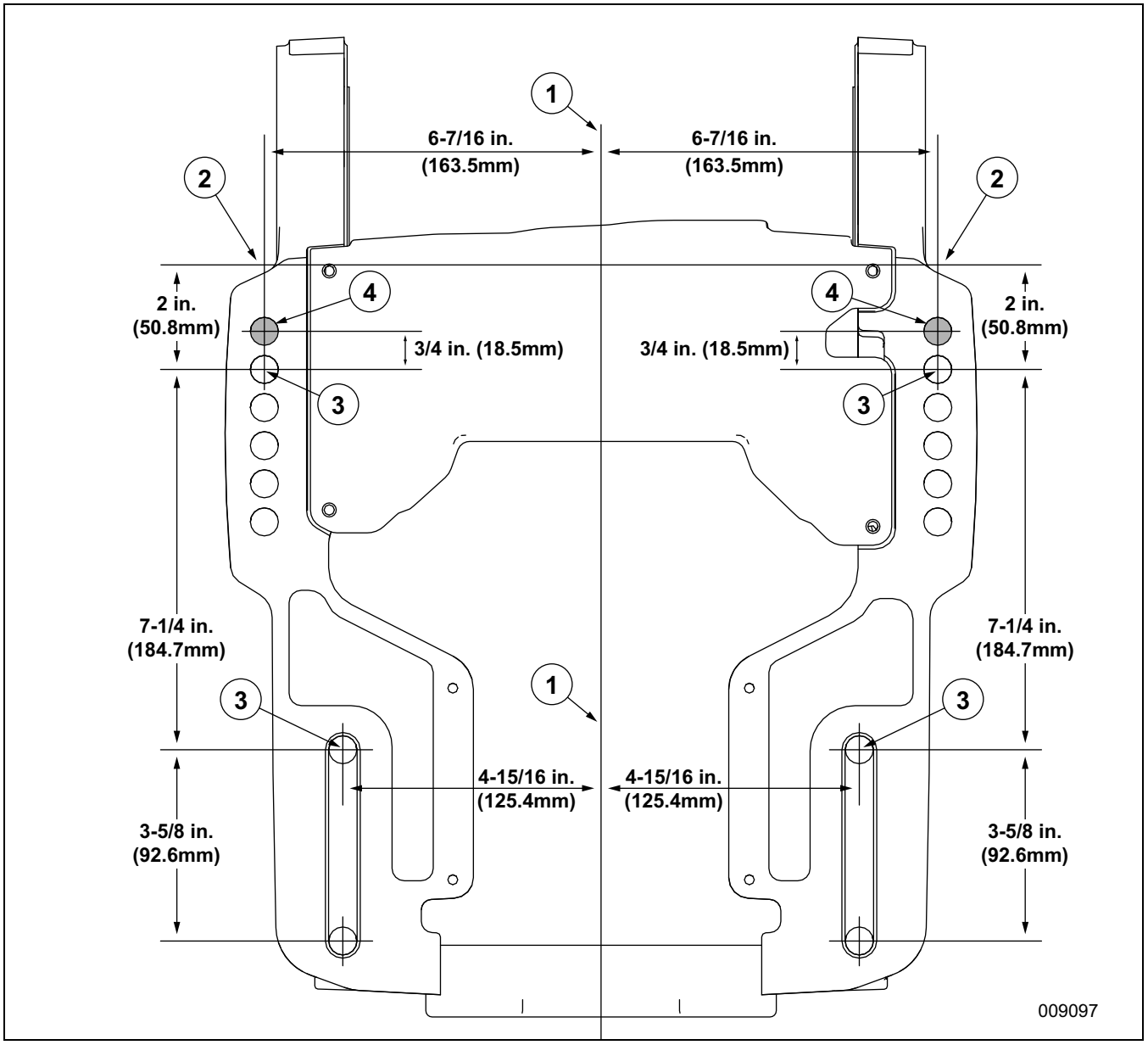
Drill four ½ in. (13 mm) mounting holes in the appropriate locations.

IMPORTANT: Be sure to drill the required holes perpendicular to transom surface.

Mount the centerline of the outboards at least 28 in. (711.0 mm) apart to eliminate interference at all tilt and steering angles.

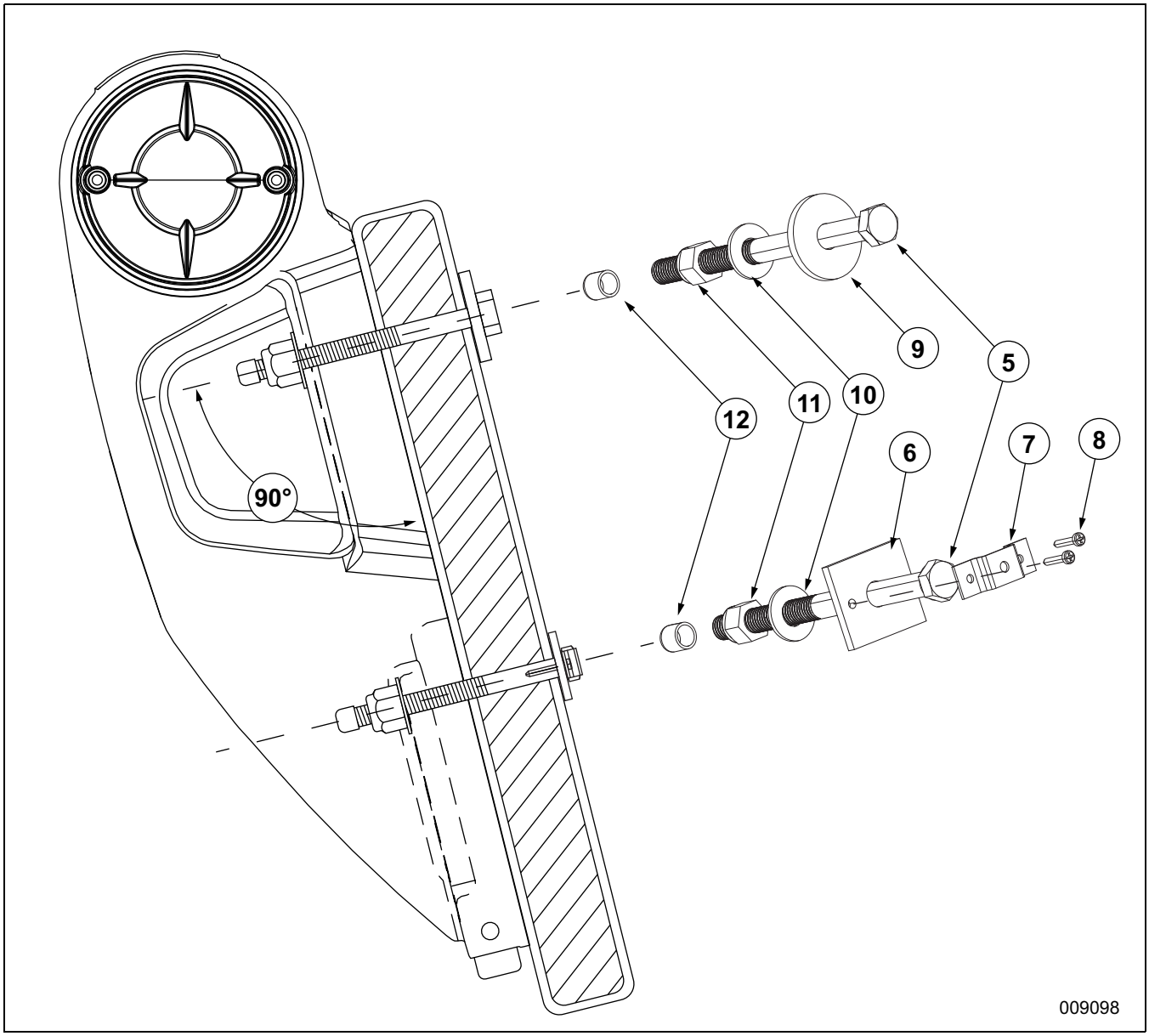
Drilling and Hardware Diagrams

IMPORTANT: This is not a template.



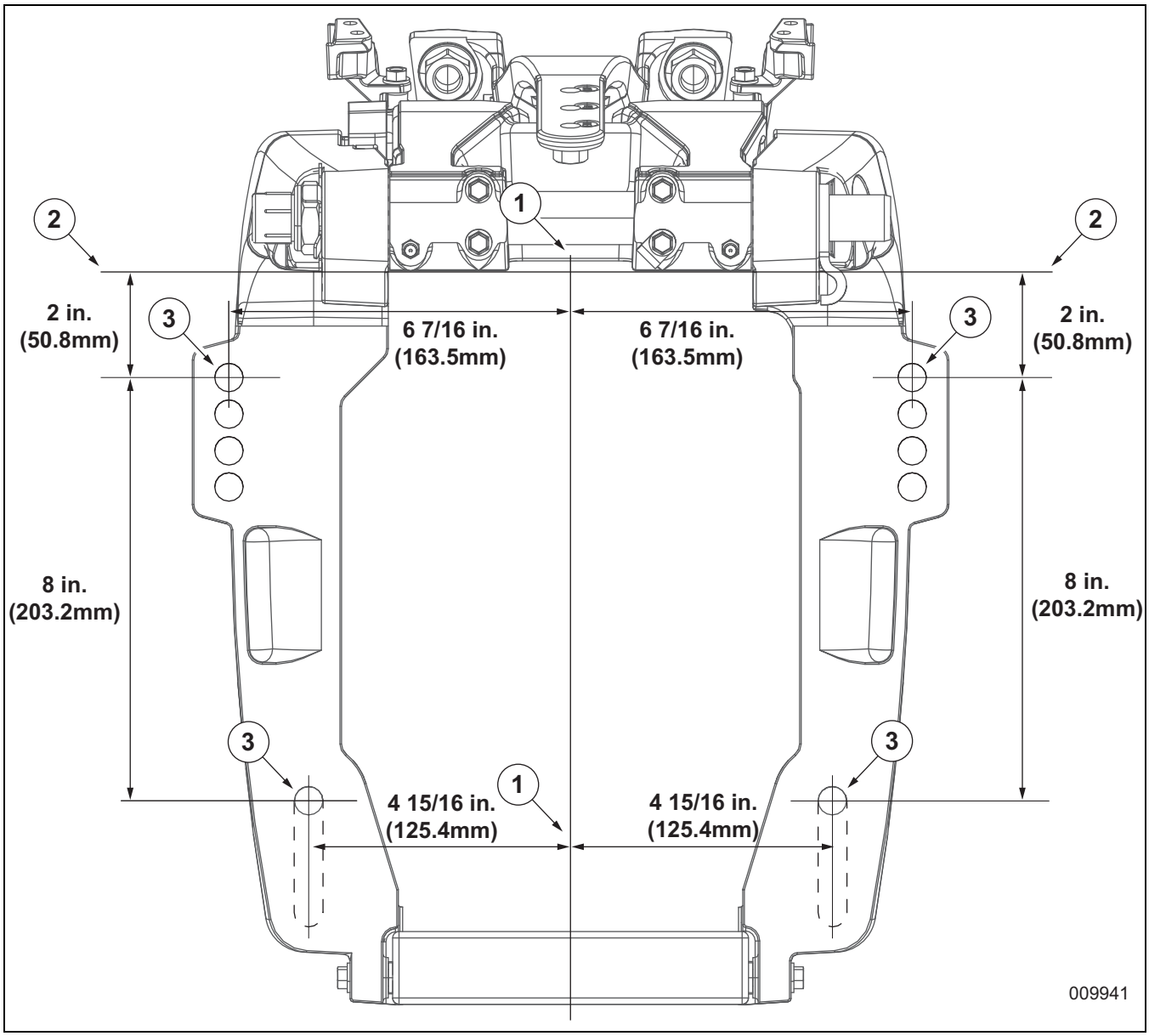
		Quantity	
1. Center of Transom	**5.** Bolt *	4	* Choose from the following bolt sizes:
2. Top of Transom	**6.** 318272 Plate	2	318573 3 1/2 in. (89 mm)
3. 1/2” Bolt Hole Locations	**7.** 318273 Retainer	4	336676 4 1/2 in. (114 mm)
4. Optional Mounting Location	**8.** 319886 Screw	2	331578 5 in. (127 mm)
	9. 307238 Washer	4	354101 6 in. (152 mm)
	10. 320248 Washer	4	354102 7 in. (178 mm)
	11. 313623 Nut	4	354103 8 in. (203 mm)
	12. 318572 Cap		354104 9 in. (229 mm)

IMPORTANT: This is not a template.



TRAC+ Midsection

IMPORTANT: This is not a template.



		Quantity	
1. Center of Transom	**5.** Bolt *	4	* Choose from the following bolt sizes:
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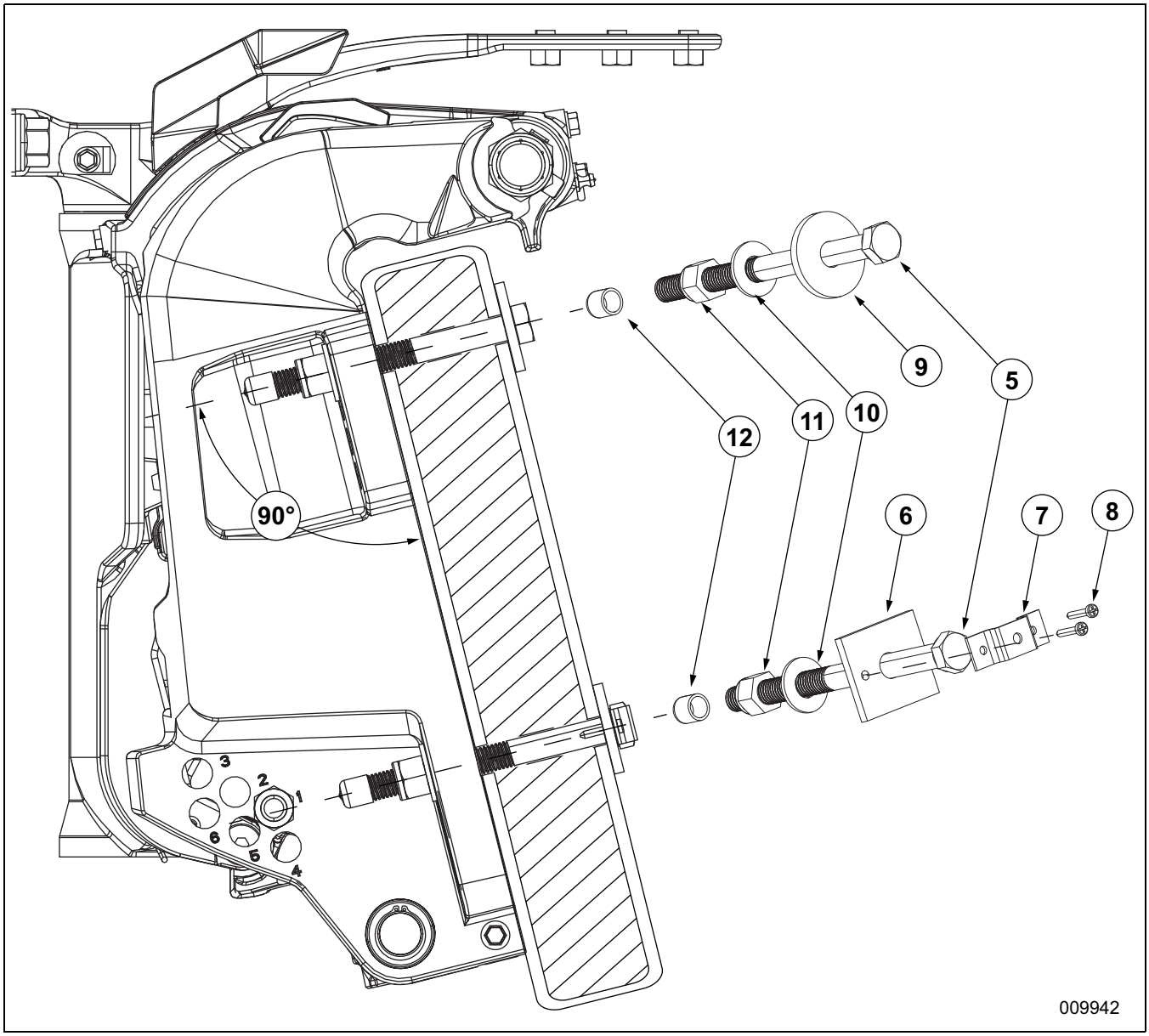


Handling the Outboard

Outboard Shipping Cover

NOTICE

Remove the outboard shipping cover BEFORE running the outboard. The shipping cover does NOT provide adequate air flow to run the engine.

Remove shipping carton. Remove the outboard shipping cover.

1. Shipping cover 009150

If the engine cover panel kit is not available, the shipping cover can be reinstalled to store the outboard short term.

009150

Discard the outboard shipping cover after the engine cover panels are installed.

NOTICE

Do NOT install the shipping cover AFTER installing the engine cover panels.

The shipping cover is not intended to fit when the engine cover panels are installed. The decals or engine cover panels could be scratched.

Lifting The Outboard

Lifting Fixture

⚠ 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.

⚠ WARNING

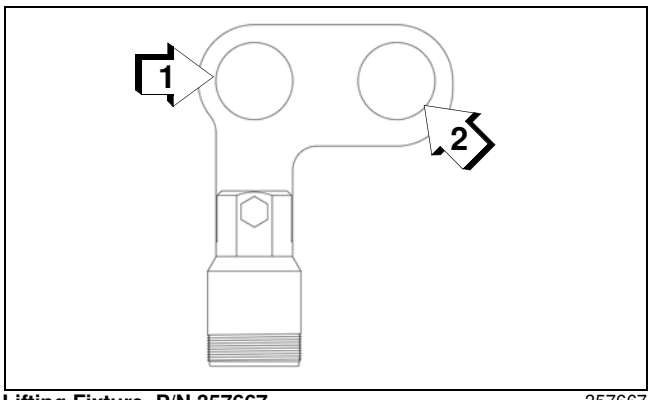
To avoid personal injury, or damage to the engine, boat or other property, install the lifting fixture completely into the flywheel.

To properly install the fixture, carefully thread the lifting fixture into the threads of the flywheel at least 6 complete turns. Do NOT cross-thread or over-torque the fixture

After the lifting fixture is installed, turn the flywheel clockwise until the off-set lifting eye of the fixture is in line to the back of the engine.

Use Lifting Fixture, P/N 357667, to lift the outboard. The centerline lifting eye is used to lift the

complete engine. The off-set lifting eye is used to remove and install the powerhead.



Lifting Fixture, P/N 357667 357667
1. *Centerline lifting eye*
2. *Off-set lifting eye*

IMPORTANT: Carefully thread the lifting fixture into the threads of the flywheel at least 6 complete turns. Do NOT cross-thread the threads of the lifting fixture into the threads of the flywheel.

Install the lifting fixture completely into the flywheel. If needed, turn the flywheel until the lifting rings of the fixture are aligned front to back as shown.

1. *Front* 009100
2. *Back*

Fasten appropriate chain hook to the front lifting eye of the tool.

Carefully hoist outboard with chain and unbolt the outboard mounting brackets from shipping container.

Outboard Mounting

Mounting Height

NOTICE

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

Evinrude E-TEC G2 models provide built in setback, compared to previous models.

As a starting point, the anti-ventilation plate of the gearcase should align approximately 2 in. (51 mm) above the bottom of the hull.

Optimum boat performance depends on outboard mounting height. Boats that exceed 50 MPH may benefit from higher outboard mounting heights. Consult the boat manufacturer for specific outboard mounting height information for a particular hull.

Water test the outboard and boat with different outboard mounting heights until the best performance is achieved.

Also see **Multiple Outboard Mounting Height** on p. 57.

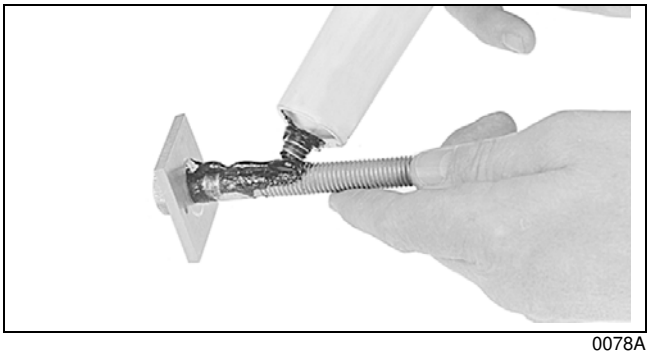
Mounting Bolt Installation

⚠ 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.

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.

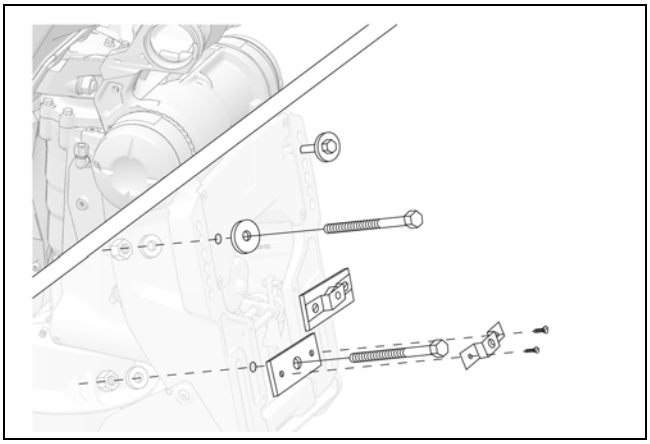
Apply marine sealer under hex heads of bolts, on the mounting plates, and to the bolt shanks.



0078A

Assemble transom mounting plates on mounting bolts.

Install the mounting bolts through the transom from the inside of the boat.



009101

Position the square aluminum transom mounting plates (when applicable) so the retainer holes are horizontal.

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.

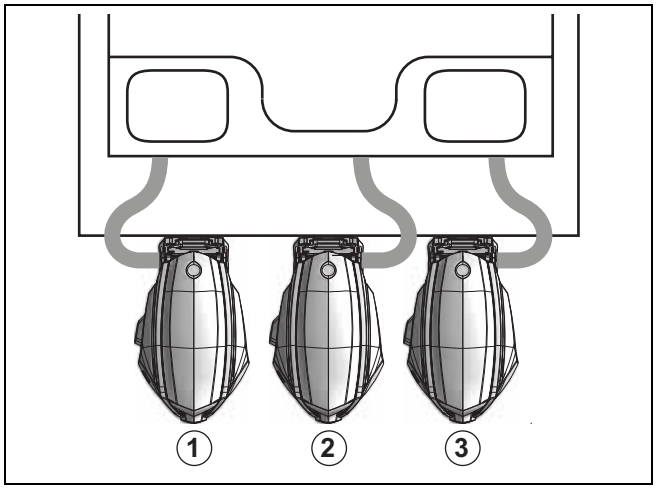
Install all washers and nuts. Tighten nuts and bolts to a torque of 40 ft. lbs. (54 N·m).

Multiple Outboard Transom Mounting Locations

A three outboard installation REQUIRES 2 DPS outboard models.

Install DPS outboards in the following transom positions:

- 1 and 2, or
- 2 and 3, or
- 1 and 3



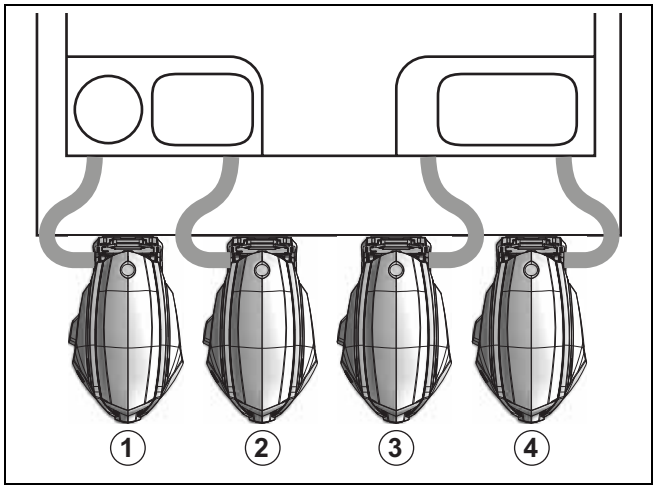
Transom Positions - Three Outboards

A four outboard installation REQUIRES 2 DPS outboard models. One DPS outboard MUST be mounted on the port side of the boat and the other on the starboard side of the boat.

Install DPS outboards in the following transom positions:

- 1 and 3, or
- 2 and 3, or
- 2 and 4

Do NOT install DPS outboards together in transom positions 1 and 2, or 3 and 4.



Transom Positions - Four Outboards

Multiple Outboard Mounting

Height

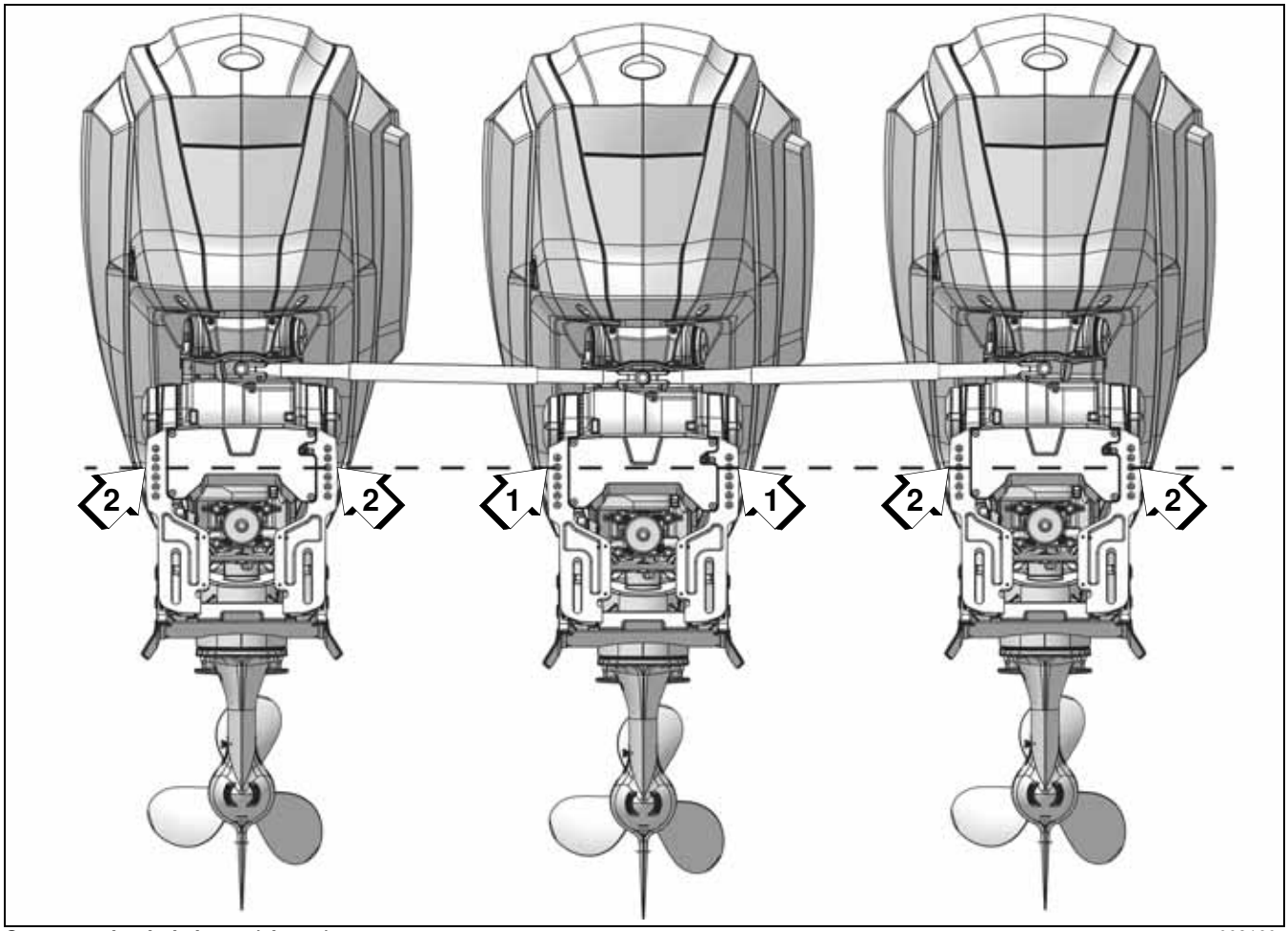
⚠ CAUTION

The correct shifting of a standard or counter rotation gearcase is determined by the engine model number stored in the *EMM* of the engine.

- **Do NOT swap a standard rotation gearcase onto an engine with a counter rotation model number! See Models Covered on p. 11.**
- **Do NOT swap a counter rotation gearcase onto an engine with a standard rotation model number! See Models Covered on p. 11.**

Swapping gearcases can result in an unexpected loss of boat control and extended operation can damage the internal parts of the gearcase.

When installing three or four engines, the center outboard(s) should be mounted no more than one mounting hole location lower or higher to prevent the tie bars from binding at all tilt or turn angles.



One mounting hole lower (shown) 009160

1. *Center engine mounted using 2nd hole*
2. *Port & starboard engines mounted using 3rd hole*

Plug Installation

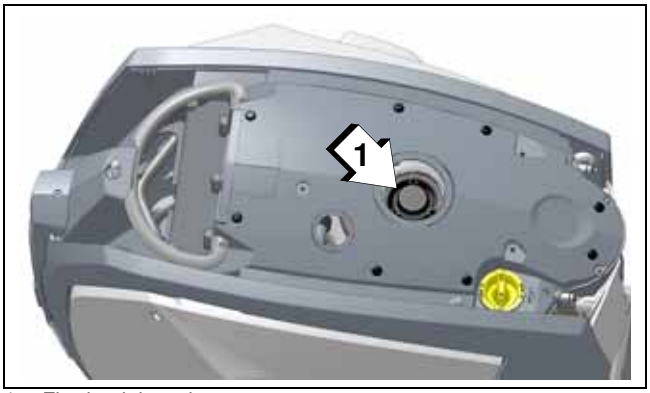
NOTICE

Install plugs as indicated. Plugs MUST be installed to prevent water entry and/or engine performance issues.

Make sure plugs are securely installed to prevent loosening during engine operation.

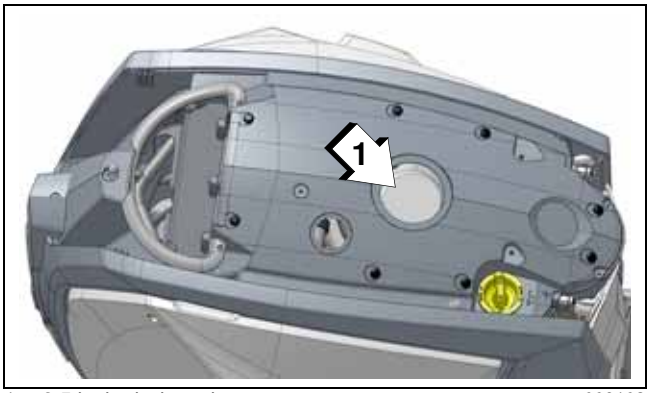
Install the following plugs from the Owner's Kit:

1. Apply *Triple Guard* grease to the threads of the flywheel. Then install the Flywheel Thread Plug, P/N 357323 to protect the threads from corrosion.



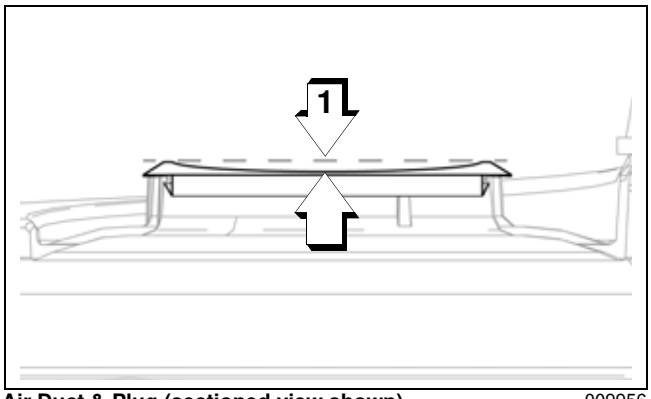
1. Flywheel thread protector 009102

2. Install the 3.5 inch Air Duct Plug, P/N 357310, to help cool the stator.



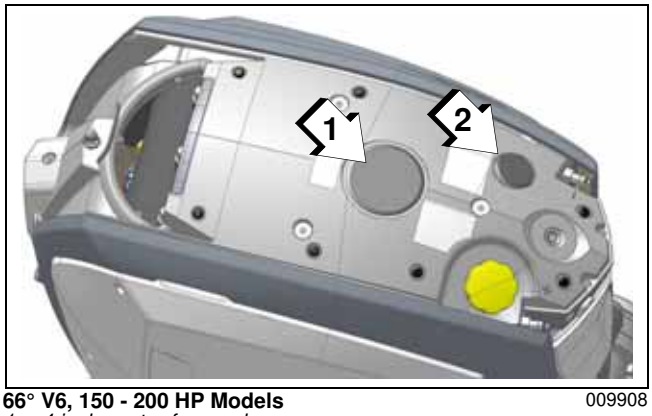
1. 3.5 inch air duct plug 009103

IMPORTANT: Firmly press on the perimeter of the plug to install. When the plug is installed correctly, the center will be depressed approximately 0.25 in. (6 mm).

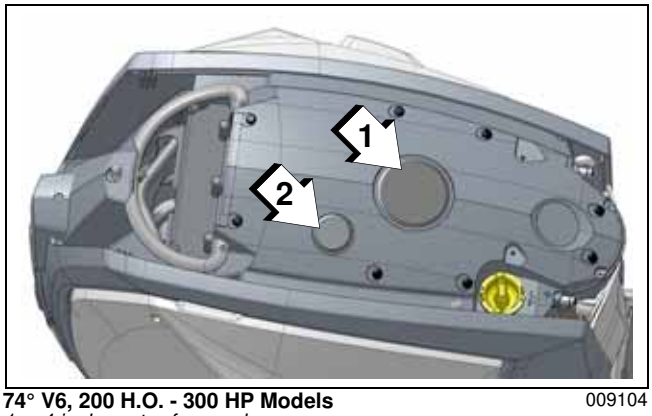


Air Duct & Plug (sectioned view shown) 009956
1. Center of plug depress 0.25 in (6 mm)

3. Install the 4.0 inch Center Frame Plug, P/N 356050, and the 2.0 inch Timing Pointer Plug, P/N 356468, to provide correct air flow to the engine.



66° V6, 150 - 200 HP Models 009908
1. 4 inch center frame plug
2. 2 inch timing pointer plug



74° V6, 200 H.O. - 300 HP Models 009104
1. 4 inch center frame plug
2. 2 inch timing pointer plug

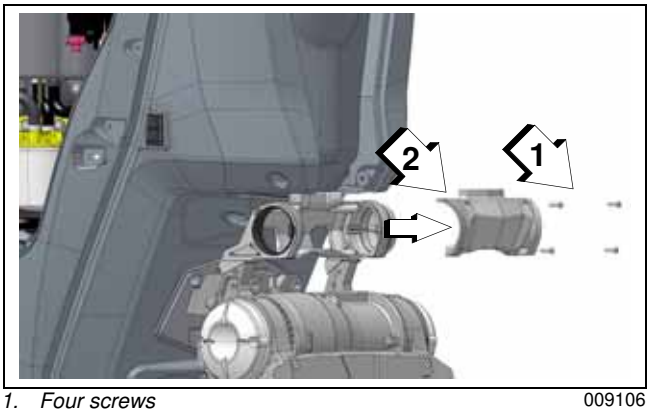
Outboard Rigging

Table of Contents

Rigging Center Access

Evinrude E-TEC G2 models utilize a central rigging center. All buss cables, hydraulic steering, fuel and oil hoses and other rigging enter the rigging center through a cable entryway.

Remove four screws from the cable entry cover. Remove the cover.

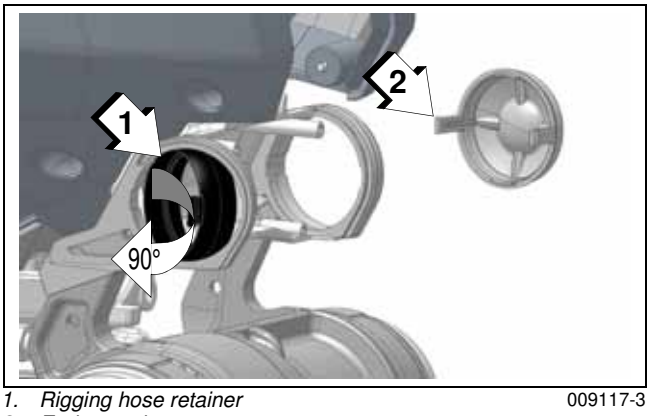


1. *Four screws*
2. *Cable entry cover*

009106

The cable entryway is set up for starboard cable entry but can be adapted for port cable entry.

Rotate the rigging hose retainer 90° and pull to remove. Carefully squeeze the end cap at the tab locations and pull to remove. Reinstall the retainer and end cap into the desired locations.



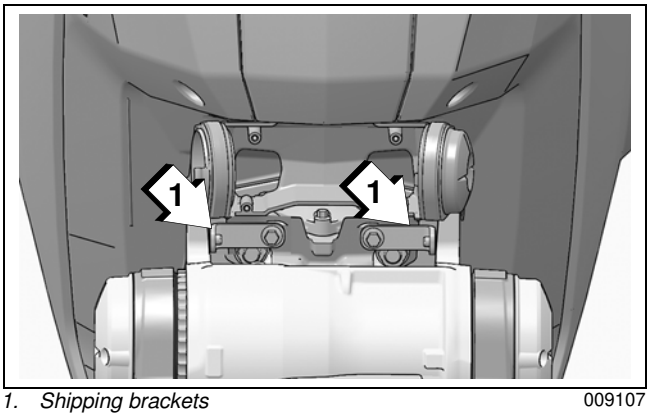
1. *Rigging hose retainer*
2. *End cap tab*

009117-3

Shipping Brackets

Remove the shipping brackets from the steering arm and stern bracket.

IMPORTANT: Save the screws attaching the shipping brackets to the steering arm. This screw is used with the steering lock tool to bleed the hydraulic steering system.



1. *Shipping brackets*

009107

Rigging Hose

Rigging Hose Requirement

NOTICE

A 12 in. (304.8 mm) or longer length of rigging hose such as P/N 770392, or P/N 770393 is REQUIRED to prevent damage to buss cables, hoses, harnesses or other wiring entering the outboard rigging center.

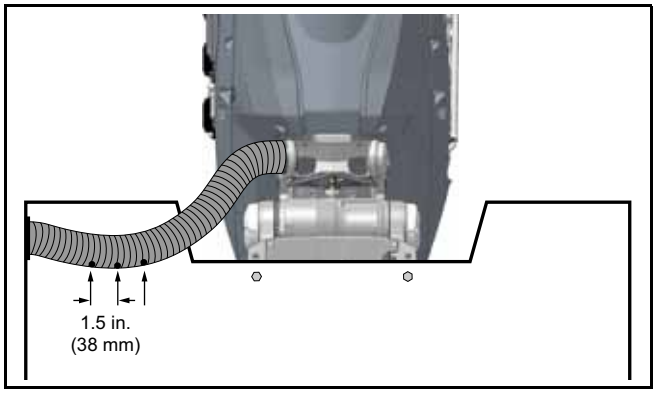
Rigging Hose Length

Determine the length of the rigging hose BEFORE installing cables and hoses through the rigging hose.

Then determine the lowest point of the rigging hose in the installed position.

Use a drill and drill bit to make three 3/8 in. (10 mm) drain holes in the rigging hose:

- make the first drain hole at the lowest point.
- make the second and third drain hole 1.5 in. (38 mm) each side of the first drain hole.

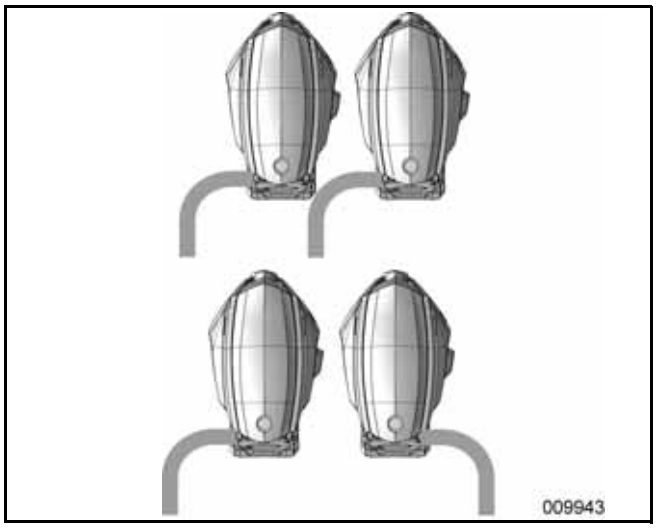


Drain Holes

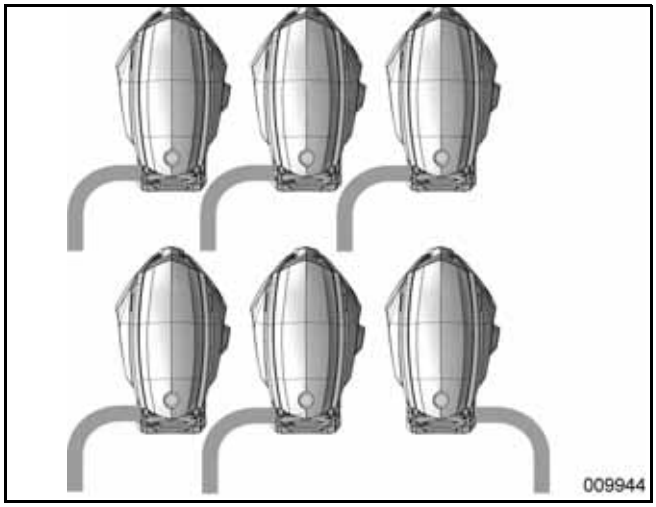
Rigging Hose Installation Options

Allow one rigging hose per engine. The rigging hose can enter from the starboard or port side. When rigging multiple engines additional options are available, shown are some suggestions:

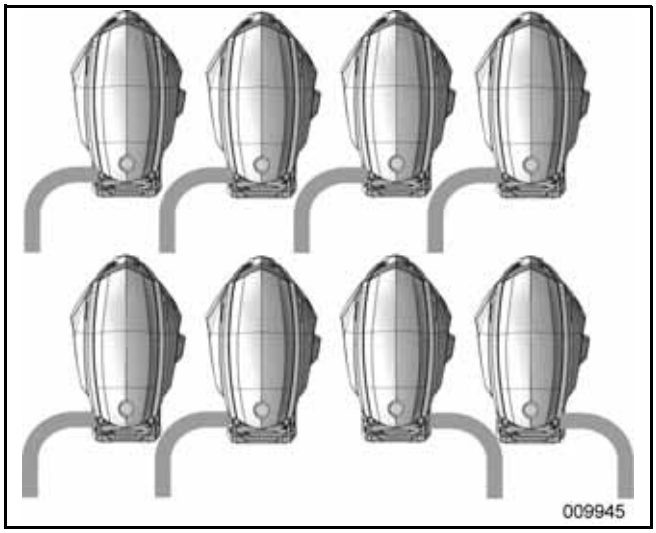
Two Engines



Three Engines



Four Engines

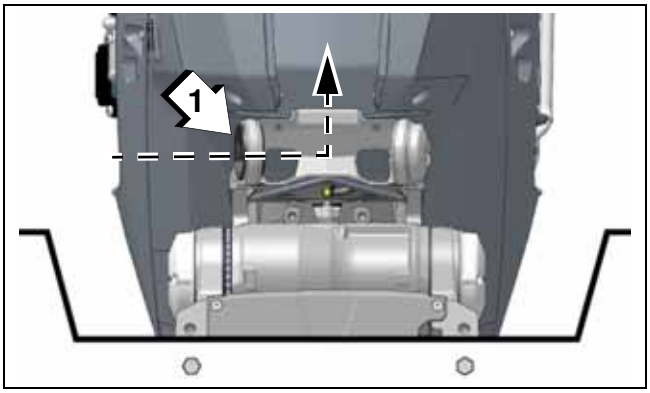


Buss Cable, Hoses, and Wire Routing and Connections

NOTICE

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

All hydraulic steering hoses, battery cables, buss cables, fuel and oil hoses and related rigging enter the rigging center through a cable entryway.



1. Rigging center cable entry 009117

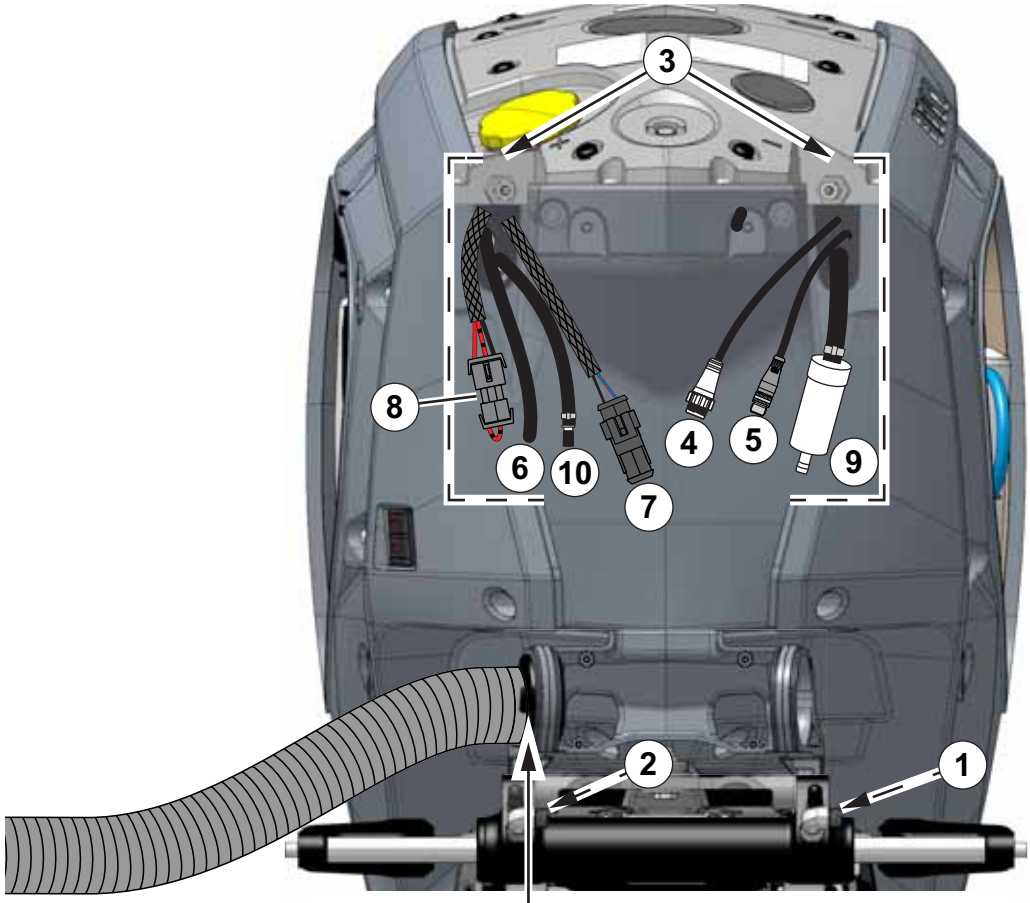
Hose and cable lengths are measured from the cable entryway to the connection point in the rigging center. Refer to **74° V6 Models Hose and Cable Lengths (Full Featured Midsection)** on the next page.

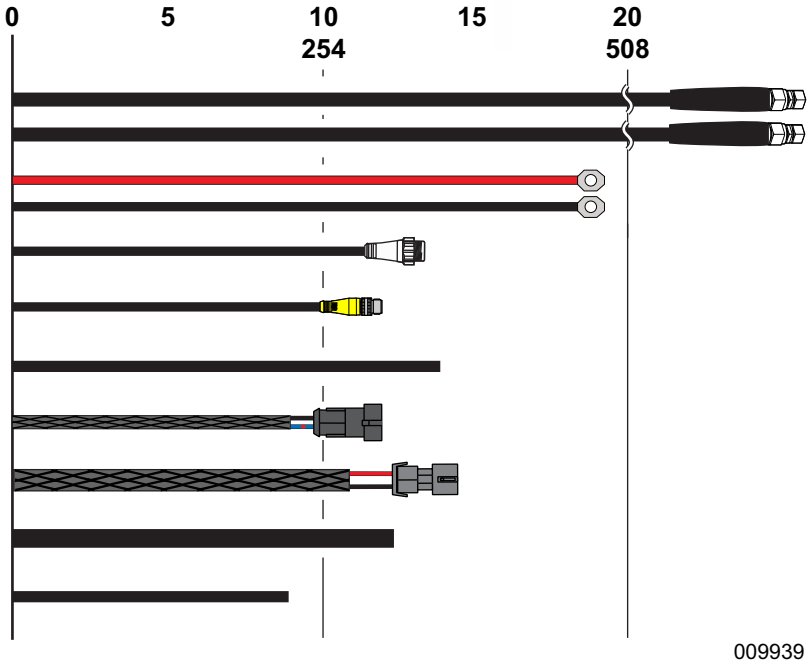
Route all steering hoses, battery cables, fuel and oil hoses, buss cables, and optional accessories such as auxiliary battery charging cable, or remote oil tank hose from the boat through a protective conduit into the rigging center cable entry.

When installing hoses and cables through the flexible tubing, install in this order:

1. steering hoses
2. battery cables
3. fuel hose
4. optional oil or flush hoses
5. buss cables
6. optional accessory connections

66° V6 Models Hose and Cable Lengths (TRAC+ Midsection)



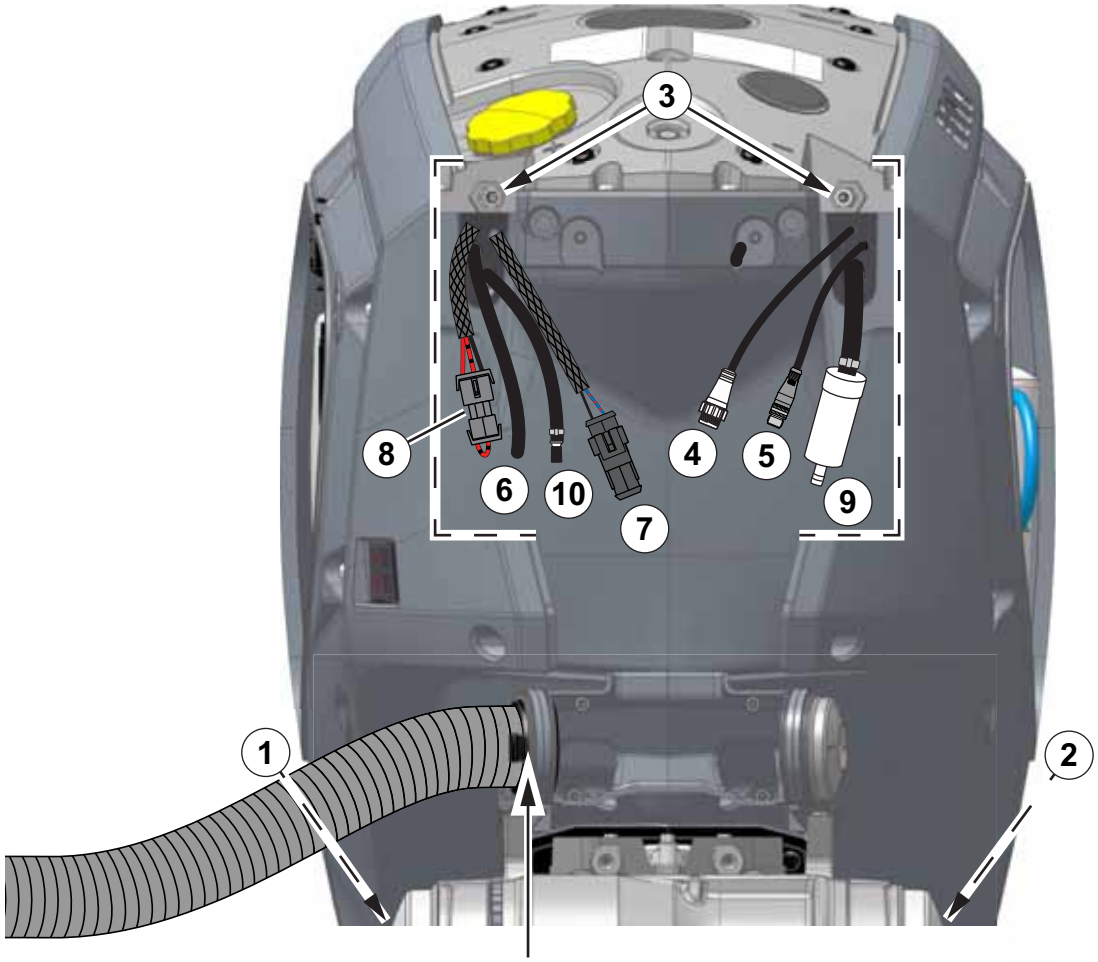


Component	inches	mm
1. *Starboard Steering Hose†*	34	864
2. *Port Steering Hose†*	44.5	1130
3. *Battery Cables*	21.5	457
4. *NMEA 2000 Network*	13.25	337
5. *Control Network*	13	330
6. *Flush Hose*	14	356
7. *Remote Oil Tank Connector*	12	305
8. *Auxiliary Battery Connector*	14.5	368
9. *Fuel Hose*	12	305
10. *Remote Oil Tank Hose*	9	229

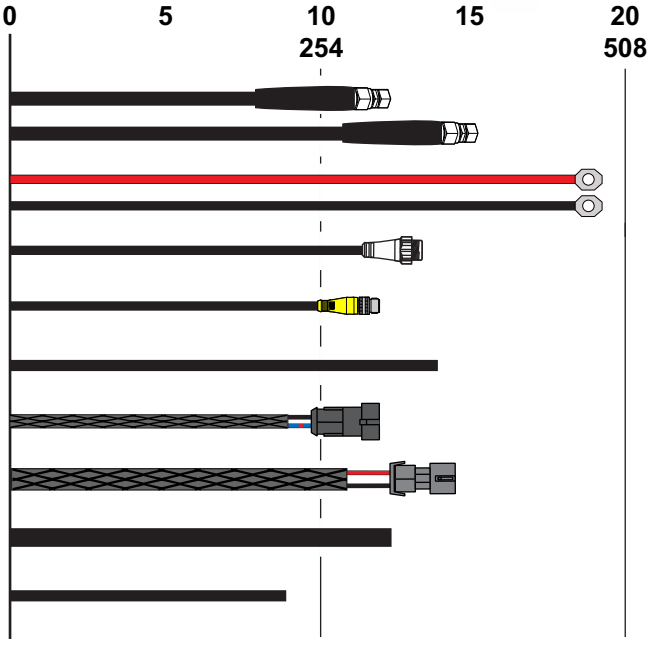
† Use this length ONLY if hydraulic hoses are routed through the rigging center.

009939

66° V6 Models Hose and Cable Lengths (Full Featured Midsection)

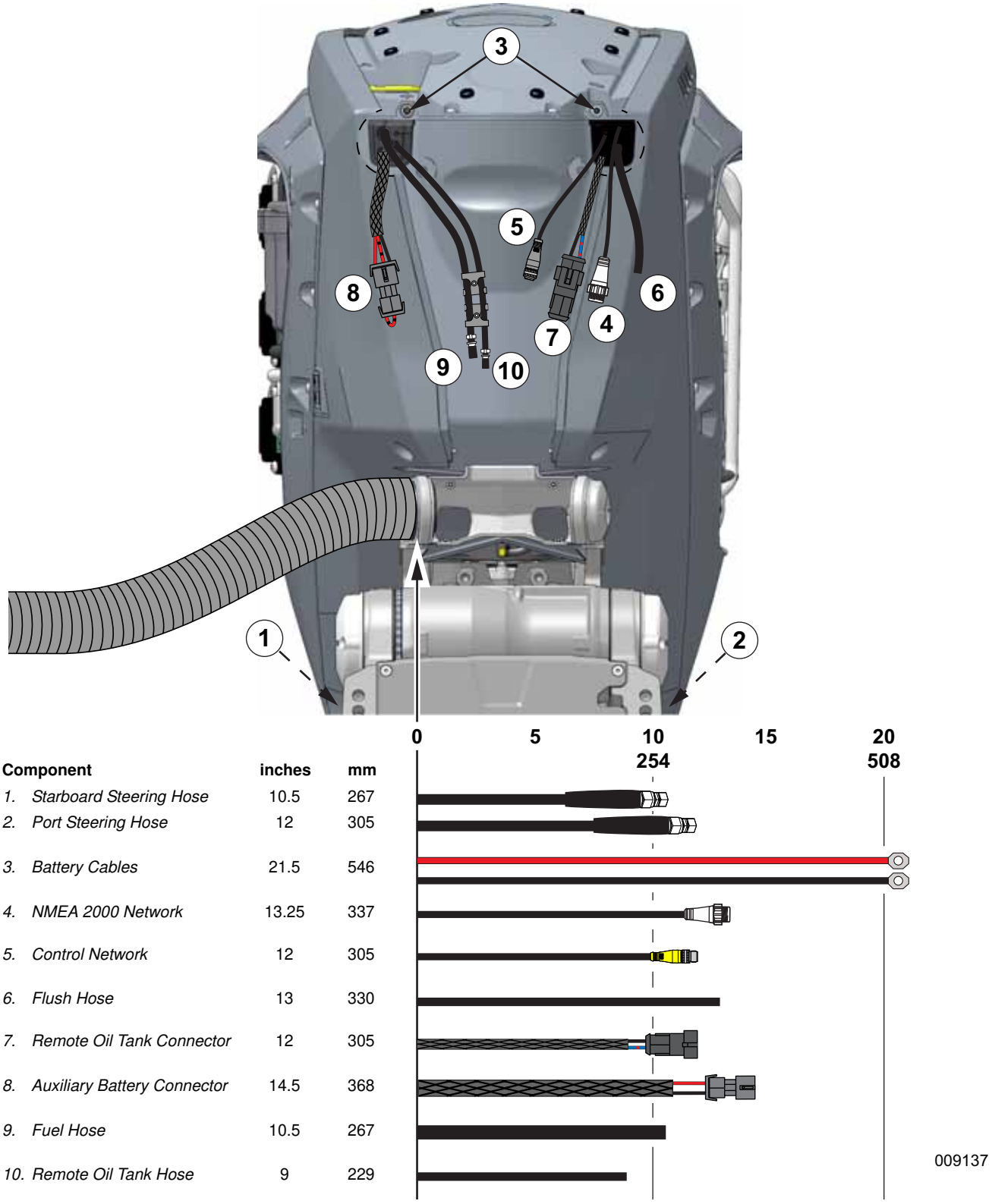


Component	inches	mm
1. *Starboard Steering Hose*	12	305
2. *Port Steering Hose*	15	381
3. *Battery Cables*	21.5	457
4. *NMEA 2000 Network*	13.25	337
5. *Control Network*	13	330
6. *Flush Hose*	14	356
7. *Remote Oil Tank Connector*	12	305
8. *Auxiliary Battery Connector*	14.5	368
9. *Fuel Hose*	12	305
10. *Remote Oil Tank Hose*	9	229



009936

74° V6 Models Hose and Cable Lengths (Full Featured Midsection)



Component	inches	mm
1. *Starboard Steering Hose*	10.5	267
2. *Port Steering Hose*	12	305
3. *Battery Cables*	21.5	546
4. *NMEA 2000 Network*	13.25	337
5. *Control Network*	12	305
6. *Flush Hose*	13	330
7. *Remote Oil Tank Connector*	12	305
8. *Auxiliary Battery Connector*	14.5	368
9. *Fuel Hose*	10.5	267
10. *Remote Oil Tank Hose*	9	229

009137

Hydraulic Steering Hoses

⚠ WARNING

Incorrect connection of hydraulic hoses will cause the engine to steer in the opposite direction of the helm input.

This can result in loss of boat control and injury to the occupants.

Hydraulic Hose Routing Full Featured Midsection

First install the hydraulic steering hoses through the flexible conduit.

NOTICE

Install steering hose anti-kink retainer, P/N 357893 from the owners kit to prevent hydraulic hose damage.

Next, install steering hose anti-kink retainer onto the:

- PORT hydraulic hose **IF** the port cable entry is used.
- STARBOARD hydraulic hose **IF** the starboard cable entry is used *(shown)*.

IMPORTANT: Make sure the steering hose anti-kink retainer is installed on the hydraulic hose as shown:

- anti-kink retainer should touch the strain relief on the hydraulic hose.
- anti-kink retainer should be positioned to prevent the hydraulic hose from chafing against the rigging center.

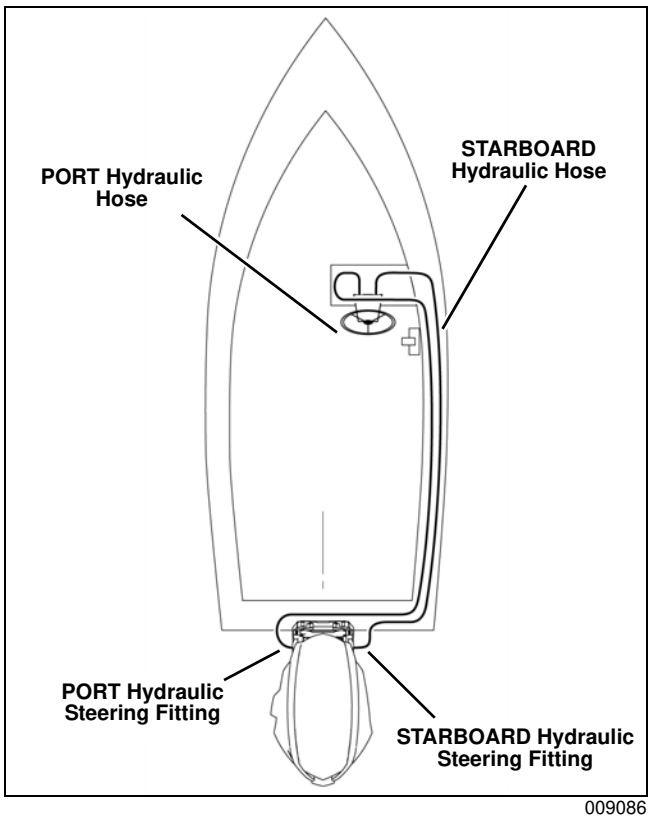
1. Anti-kink retainer 009108

Then route the hydraulic steering hoses through the rigging center as shown. Take care NOT to kink the hoses during installation.

Hydraulic Hose Connections

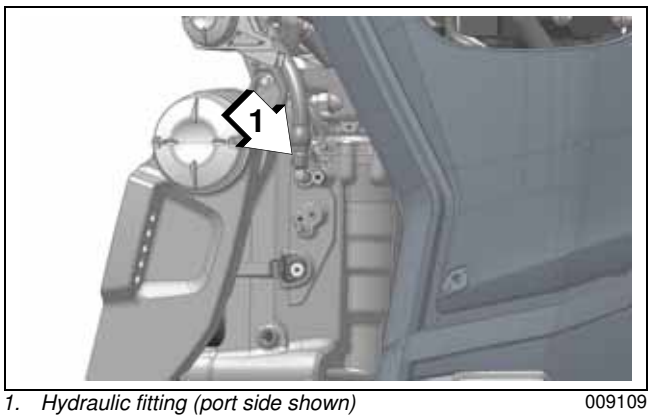
Connect the PORT hydraulic hose from the helm to the PORT hydraulic steering fitting on the stern bracket. Tighten the nut by hand until fittings are seated.

Connect the STARBOARD hydraulic hose from the helm to the hydraulic steering fitting on the STARBOARD stern bracket. Tighten the nut by hand until fittings are seated.



009086

Tighten both hydraulic hose fittings to a torque of 15 ft. lbs (20.3 N·m).



1. Hydraulic fitting (port side shown) 009109

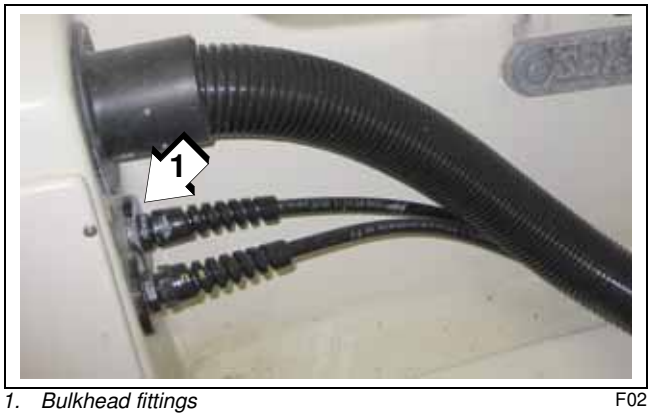
Hydraulic Hose Routing (TRAC+ Midsection)

Outboards with the TRAC+ midsection may use an external hydraulic steering cylinder. Install the steering cylinder on the outboard first.

IMPORTANT: Refer to the installation instructions provided with the steering cylinder.

There are multiple options for routing hydraulic hoses. The following are some suggested options.

1. In applications using bulkhead fittings, route the hydraulic steering hoses outside of the flexible conduit, directly to the steering cylinder.



1. Bulkhead fittings F02

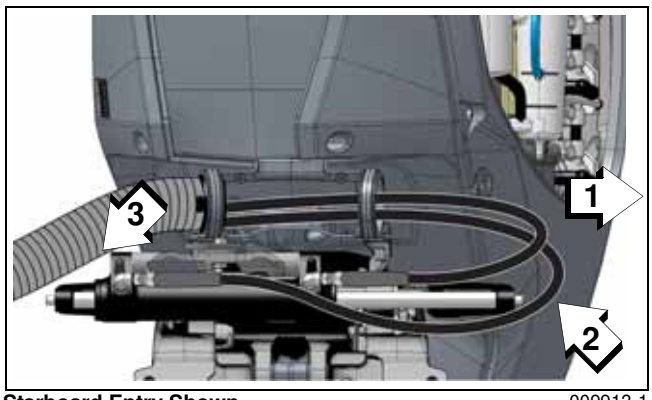
2. In applications where the hydraulic hoses are routed with other rigging, the hydraulic hoses MAY be routed through the flexible conduit.

Route the hoses into the rigging center and out the opposite side as shown.

IMPORTANT: Temporarily connect the rigging hose to the rigging center.

1. Turn the outboard in the opposite direction of hose entry.
2. Inspect hydraulic hoses for clearance to prevent the hoses from kinking during a full turn.
3. Make sure the steering cylinder does NOT contact the rigging hose.

Adjust hose lengths as needed to prevent kinks.

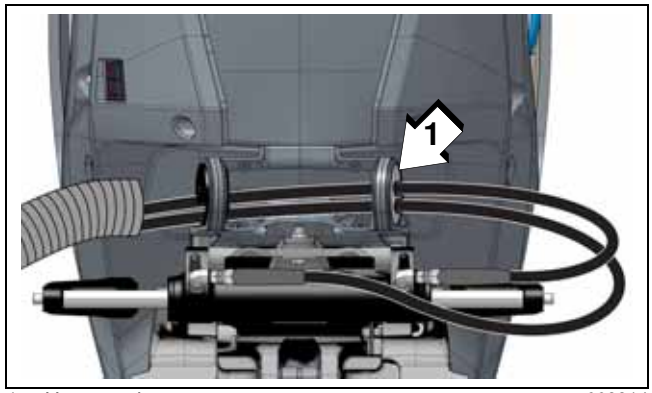


Starboard Entry Shown 009913-1
1. *Outboard turned OPPOSITE hose entry*
2. *Inspect hydraulic hoses NOT kinked*
3. *Inspect steering cylinder NOT contacting rigging hose*

Hydraulic Hose Connections

Refer to the installation instructions provided with the steering cylinder for correct hose installation.

Install the Hose Retainer, P/N 359711, over the hoses and thread into the rigging center.



1. Hose retainer 009914

Remove the rigging hose from the rigging center to continue with hose and cable installation.

Cable & Hose Connections

Also see **Rigging Center Connections,74° V6 Models** on the next page.

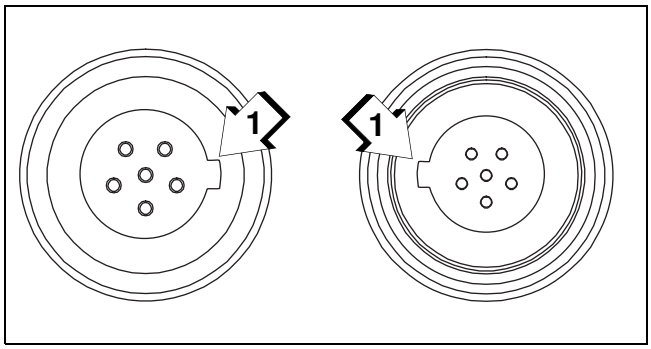
1. Install the positive (**+**) battery cable to the positive stud on the starboard side of the top frame. Tighten nut to a torque of 120 to 144 in.lb. (13.5 to 16.5 N·m).
2. Install the negative (**–**) battery cable to the negative stud on the port side of the top frame. Tighten nut to a torque of 60 to 84 in.lb. (7 to 9.5 N·m).
3. Connect the *NMEA 2000* buss cable from a tee in the boat to the outboard's *NMEA 2000* buss cable.
4. If installing an optional remote oil tank, remove the protective cover from the harness on the outboard. Connect the electrical connector from the oil tank to the connector on the outboard.
5. If installing an optional remote oil tank, connect the oil supply hose from the oil tank to the fitting on the outboard. Secure hose with *Oetiker* clamp. Refer to the instructions provided with the remote oil tank kit.
6. Connect the fuel supply hose from fuel tank to hose fitting on the outboard. Secure hose with *Oetiker* clamp.
7. If installing an optional auxiliary battery charging kit, remove plug from outboard harness and discard plug. Connect the auxiliary battery charge cable to the connector on the outboard.
8. Remote control network cable:
   – If installing multiple engines, review **Multiple Outboard Instancing** on p. 72 first.
   – Connect the remote control network buss cable to the outboard's buss cable. Refer to **Remote Control Network Connection** on p. 68.

Remote Control Network Connection

IMPORTANT: Do not force connectors or locking rings. Properly aligned connectors assemble easily.

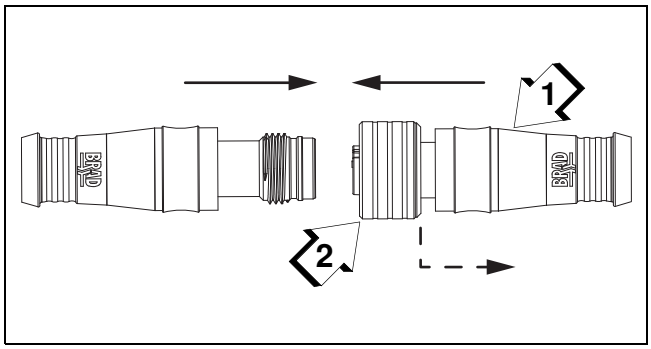
Do NOT use *Electrical Grease* on *ICON* buss cable connectors.

To assemble the connectors:
- Use the tabs to carefully align buss cable connectors.
- Look at the tabs to ensure connector alignment prior to making the connection. Do not rotate connectors until they align. This could result in a mismatched connection. It is possible for each pin to enter a socket even if the tabs are misaligned.
- Carefully align pins and sockets of connectors. Do NOT force connectors together.



1. Tabs 009138

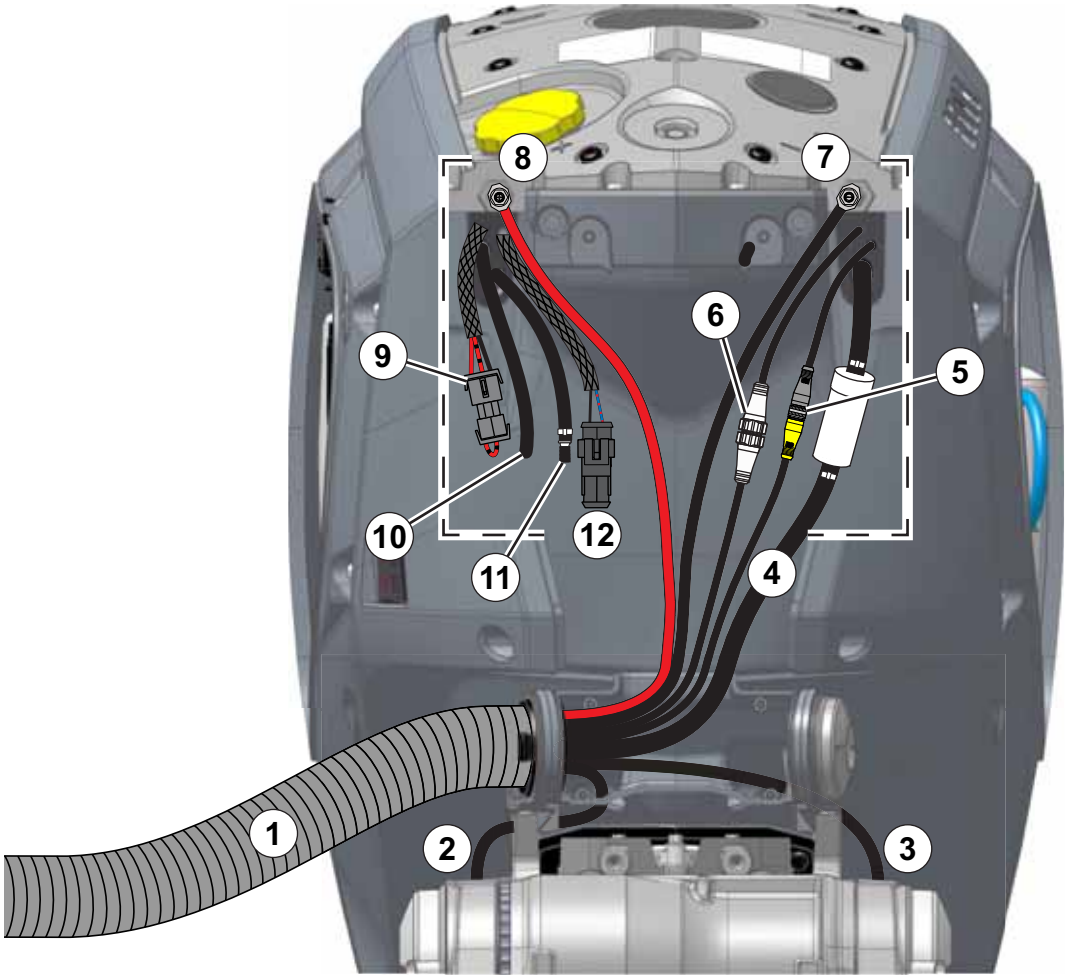
- Pull back the coupler of the female buss connector as the connectors are joined. Do NOT force connectors together.



1. Female buss connector 009138
2. Coupler

- Release the coupler to lock the connectors together.
- Gently try to pull the connectors apart to ensure they are locked together.

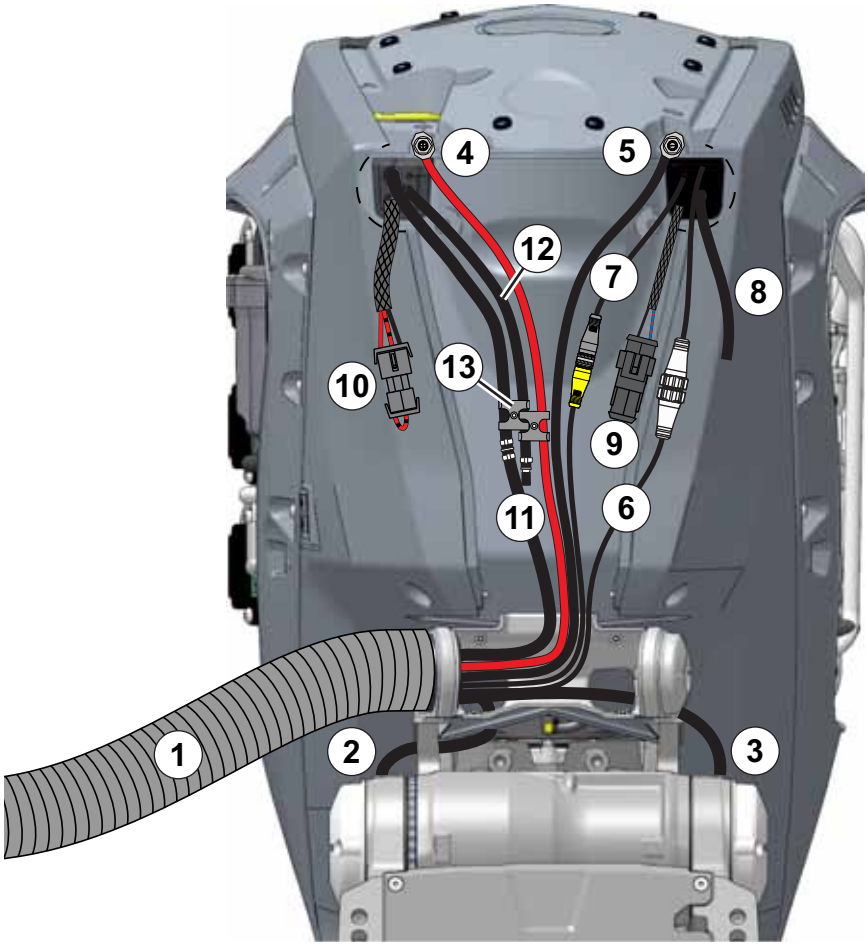
Rigging Center Connections, 66° V6 Models



Rigging Center (Full Featured Model Shown)

1. *Flexible Conduit*
2. *Starboard Steering Hose*
3. *Port Steering Hose*
4. *Fuel Supply Hose*
5. *Remote Control Network Cable*
6. *NMEA 2000 Network Cable*
7. *Negative (–) Battery Stud*
8. *Positive (+)Battery Stud*
9. *Auxiliary Battery Charge Connector (optional)*
10. *Engine Flushing Hose (optional)*
11. *Remote Oil Tank Oil Hose (optional)*
12. *Remote Oil Tank Electrical Connector (optional)*

Rigging Center Connections,74° V6 Models



Rigging Center 009118

1. *Rigging Hose/Flexible Conduit*
2. *Starboard Steering Hose*
3. *Port Steering Hose*
4. *Positive (+)Battery Stud*
5. *Negative (–) Battery Stud*
6. *NMEA 2000 Network Cable*
7. *Remote Control Network Cable*
8. *Engine Flushing Hose (optional)*
9. *Remote Oil Tank Electrical Connector (optional)*
10. *Auxiliary Battery Charge Connector (optional)*
11. *Fuel Supply Hose*
12. *Remote Oil Tank Oil Hose (optional)*
13. *Clips, P/N 352531, see “Hose and Cable Clips” on page 71*

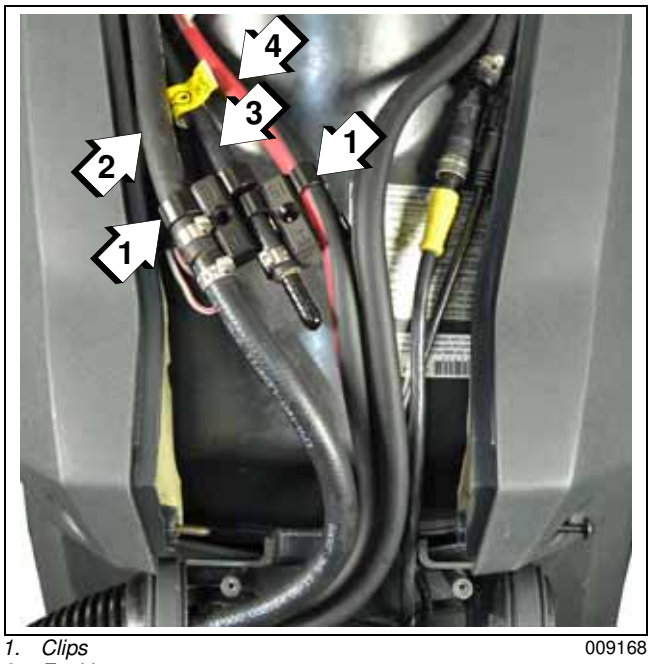
Hose and Cable Clips

74° V6 Models ONLY

After completing connections, re-position the two clips, P/N 352531, from the fuel and oil supply hoses as shown:

- Attach one clip to the fuel hose and oil supply hose.
- Attach the second clip to the oil supply hose and positive battery cable.

Make sure the crimp of each *Oetiker* clamp is positioned forward and cannot cut into or chafe any other cable or hose.

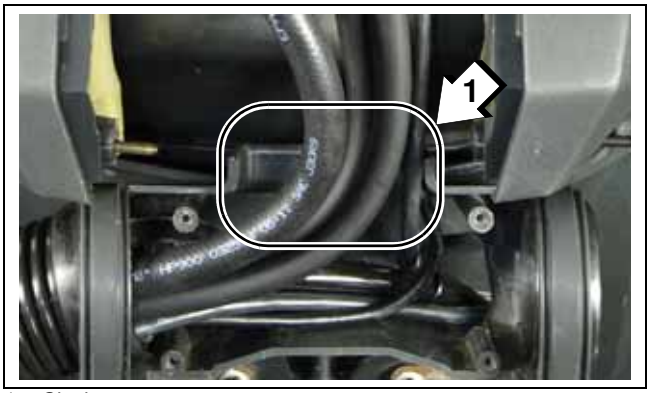


1. Clips 009168
2. Fuel hose
3. Oil supply hose
4. Positive battery cable

ALL Models

Make sure there is loose slack in all hoses and cables.

- If port cable entry is used, slack should be to the starboard side of the cable entryway.
- If starboard cable entry is used, slack should be to the port side of the cable entryway *(shown below)*.



1. Slack 009169

Hoses and cables should NOT bind or be pulled taught when engine is in a full turn.

Install cover on cable entryway with four screws. Make sure cables are not pinched between cable entryway cover and housing.

1. Cables NOT pinched 009170

4

Multiple Outboard Instancing

Multiple outboard installations require the transom position of each outboard be identified.

Engine identity is set and stored in the *EMM* of each engine. By default the *EMM* of all outboards is set to instance zero (0) at the factory. Outboards are identified as Instance 0 through 3, from port to starboard, up to four engines.

Engine identity of each outboard must be set manually or with *Evinrude Diagnostics* software v 6.1 or higher. Use the following chart to assign the engine instance number to the outboard's position on the transom.

Number of Outboards	Identity Numbers				
	Port	Port Center	Center	Starboard Center	Starboard
1	0				
2	0				1
3	0		1		2
4	0	1		2	3

If duplicate engine identity numbers are detected, the affected outboard's NEUTRAL indicator LED will flash rapidly.

Manual Instancing Method

⚠ WARNING

Do NOT vary from this procedure.

Pressing any other button on the remote control or switch panels other than the STOP switch or turning the key OFF will exit from this process.

This can cause the system to react unpredictably. If any other button is pressed accidentally, turn the key switch OFF and start the procedure over.

When manually setting engine instance, start with the port engine and work toward the starboard engine. Follow these steps EXACTLY:

1. With the key switch off, disconnect the remote control (private) network cables from all engines.
2. Push and hold the SYNC button while turning the key switch ON. Continue holding the SYNC button for at least 2 seconds.
3. Connect the remote control (private) network cable to the first (port) engine, powering the EMM. Then press the STOP button for that engine. The control will send an instance message with appropriate instance to the EMM.
4. After setting the instance on engine #1: Disconnect the private network cable from engine #1. Connect the private network cable to engine #2. Then press the STOP button for that engine.

If this installation has more than two engines, go to the step 5. If this is a dual engine installation, go to step 7.

5. After setting the instance on engine #2: Disconnect the private network cable from engine #2. Connect the private network cable to engine #3. Then press the STOP button for that engine.

If this installation has more than three engines go to the step 6. If this is a triple engine installation, go to step 7.

6. After setting the instance on engine #3: Disconnect the private network cable from engine #3. Connect the private network cable to engine #4. Then press the STOP button for that engine.
7. After setting the instance on the last engine, turn the key switch OFF. Connect the private network cable to all engines. Then turn the key switch ON to complete the instancing process.

Diagnostic Software Method

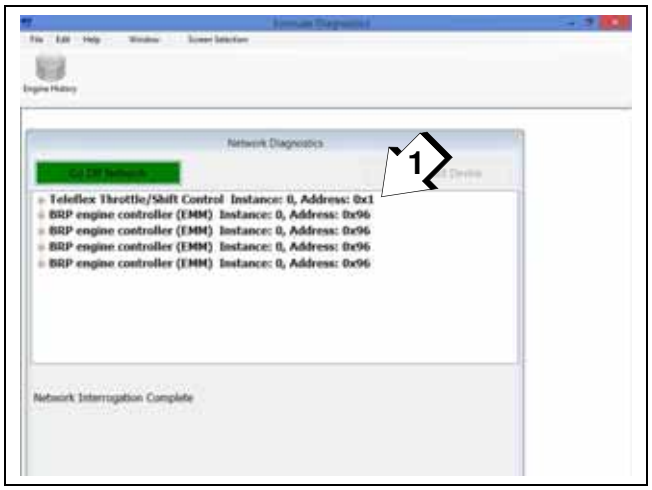
Record the model number and serial number from the serial number tag of each engine. Make note the transom position of each engine.

Use *Evinrude Diagnostics* software v 6.1 or higher to set engine instance.

1. Connect the PC to the *NMEA 2000* network. Turn the key switch ON.

Open the *Evinrude Diagnostics* software program.

2. From the *Device List* select the *EMM* for the first engine.



1. *Device List* 009161

2. Select the *Identification* screen and record the model number and serial number of the engine.
Close the *Identification* screen.

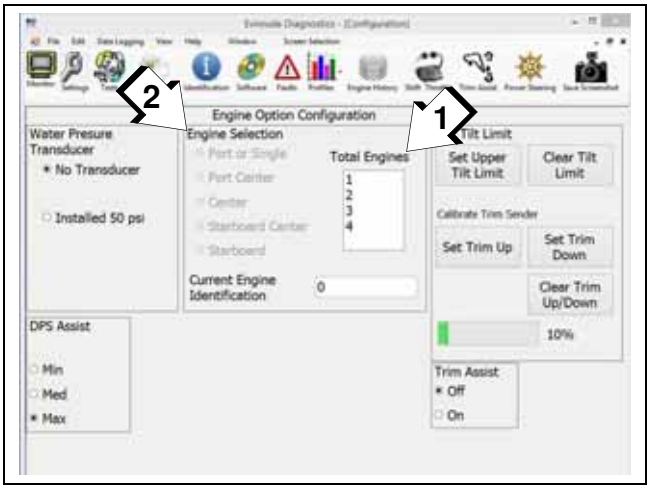
Identification Screen 009281
1. *Model Number & Serial Number*

2. Next select the *Settings* screen.
Then select the *Configure* button.

Settings Screen 009243
1. *Configure button*

2. Under *Engine Option Configuration*, select the total number of engines.

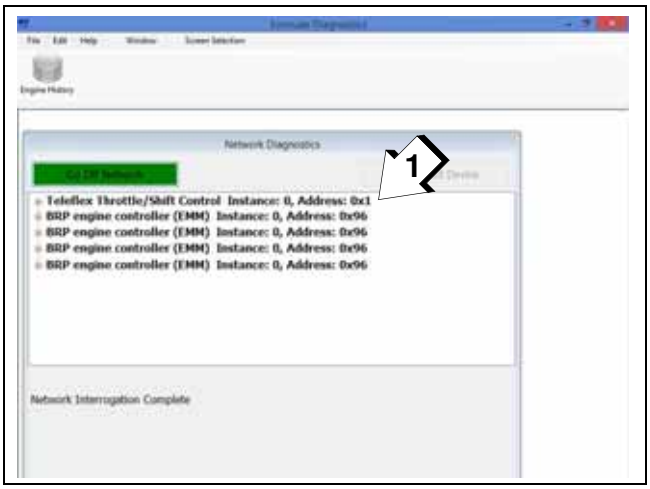
3. Then select the engine's transom position from the available *Engine Selection* list.



Engine Option Configuration 009237
1. *Total number of engines*
2. *Engine Selection list*

3. Close the *Configuration* screen.
Close the *Settings* screen.

4. From the *Device List* select *Disconnect Device.*



1. Device List 009161

2. From the *Device List* select the *EMM* for the next engine.
3. Repeat steps 3, 4 and 6 through 9 for each engine.
4. After engine identity has been set for each engine, turn the key switch OFF and back ON to complete the procedure.

Water Pressure Connection

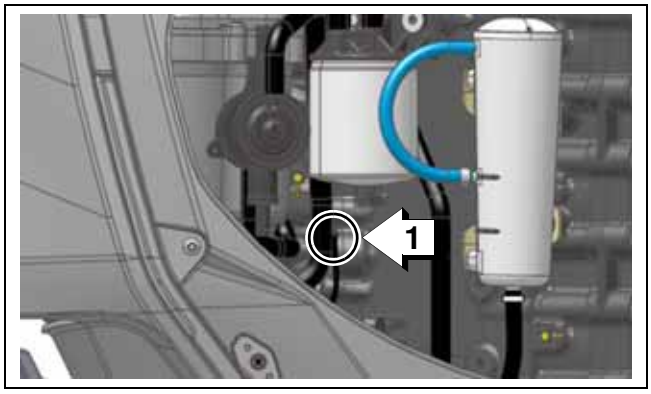
To send water pressure data to the *EMM*, along with an *NMEA 2000* display, install 50 psi Water Pressure Transducer Kit, P/N 5008640.

Water pressure readings in excess of 40 psi (275 kPa) are possible at boat speeds in excess of 50 mph (80 kph/43 kts).

IMPORTANT: Use the fittings and hose supplied with the kit. Do NOT install the transducer directly into the block.

66° V6 Models

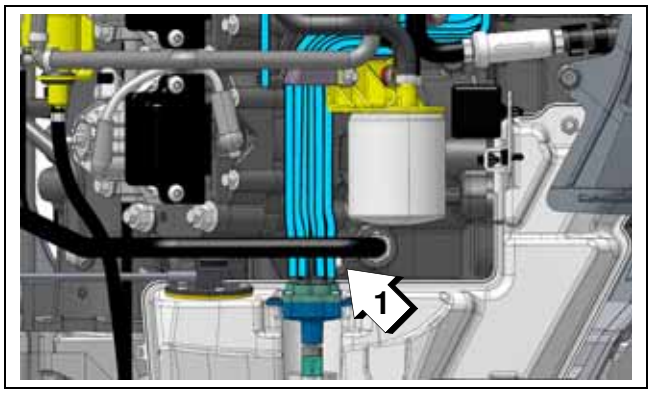
Install the water pressure transducer to the accessory water pressure hose located beneath the fuel filter. Refer to the installation instructions provided with the water pressure transducer kit.



1. Accessory water pressure hose 009891

74° V6 Models

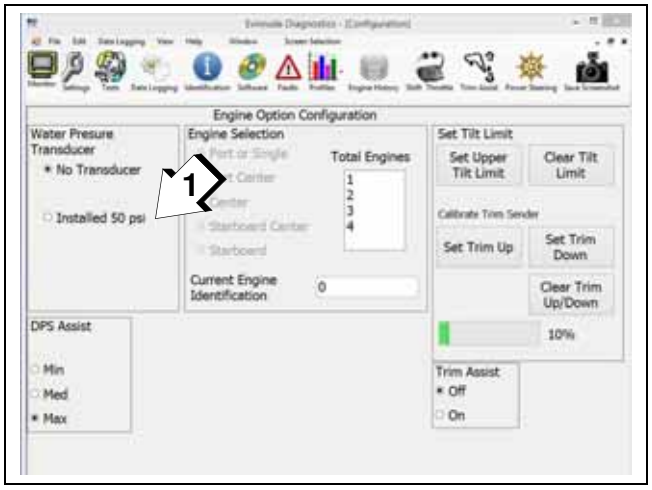
Remove the accessory water pressure plug from the engine to install the water pressure transducer. The plug is located behind the oil supply hoses. Refer to the installation instructions provided with the water pressure transducer kit.



1. Accessory water pressure plug 009119

ALL Models

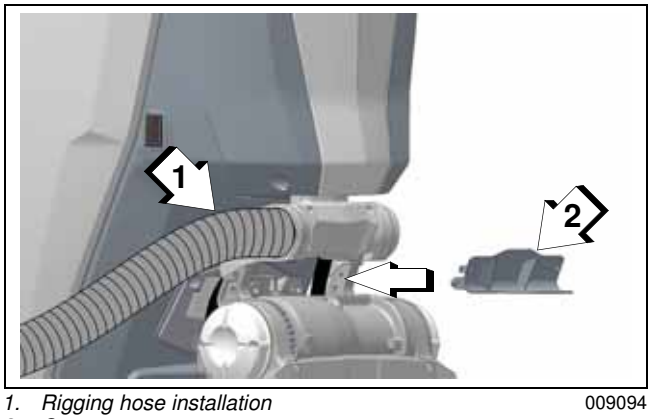
Use *Evinrude Diagnostics* software to set the water pressure transducer.



1. 50 psi Transducer 009237

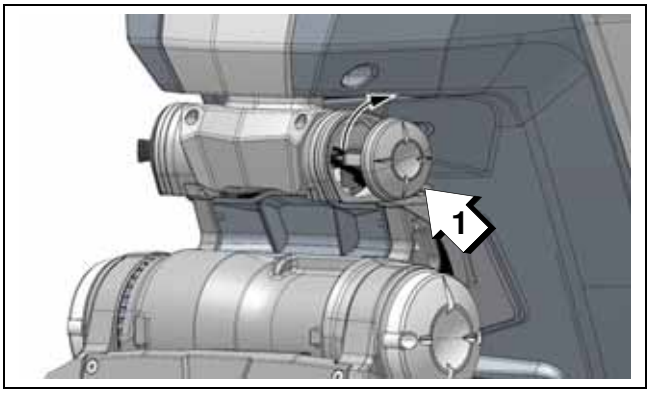
Rigging Hose and Cover Installation

Install the rigging hose to the entry port of the cable entryway. Install the cover into place below the cable entryway.



1. Rigging hose installation 009094
2. Cover

Turn the cable entryway end cap 90° to lock it into place.



1. Rigging center end cap 009391

4

Filling and Bleeding the Hydraulic Steering System

Hydraulic Steering Fluid

⚠ WARNING

Use ONLY approved hydraulic fluids.

Non-approved fluids can cause steering system damage, or reduced steering control.

This can result in loss of boat control and injury to the occupants.

Use *SeaStar* Hydraulic fluid HA5430, P/N 770891, or Hydraulic fluid meeting MIL SPEC: Mil-H-5606.

TRAC+ Midsection

Refer to the manufacturers instructions provided with the helm and steering cylinder for fluid type and bleeding procedure.

Full Featured Midsection with DPS

Single Station / Single Engine Steering Installations: The following instructions describe the fill and bleed procedure for a single engine installation. For multiple engine installations refer to **Single Station / Multiple Engine Installations on p. 78**.

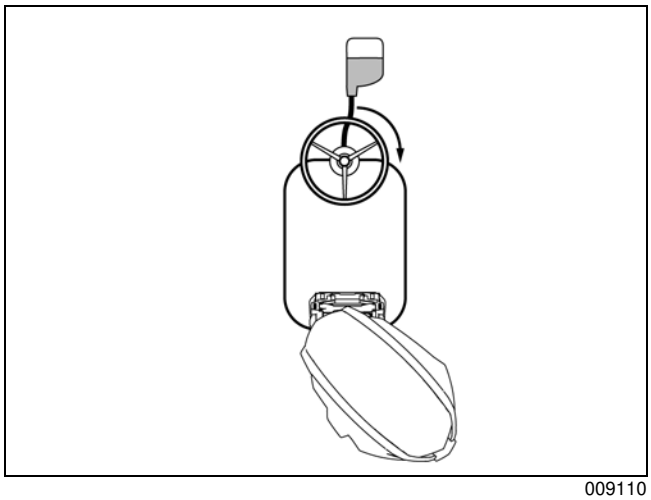
Manual Method

Also refer to the instructions provided with the hydraulic steering helm pump.

IMPORTANT: Turn the key switch to the ON position for models with DPS.

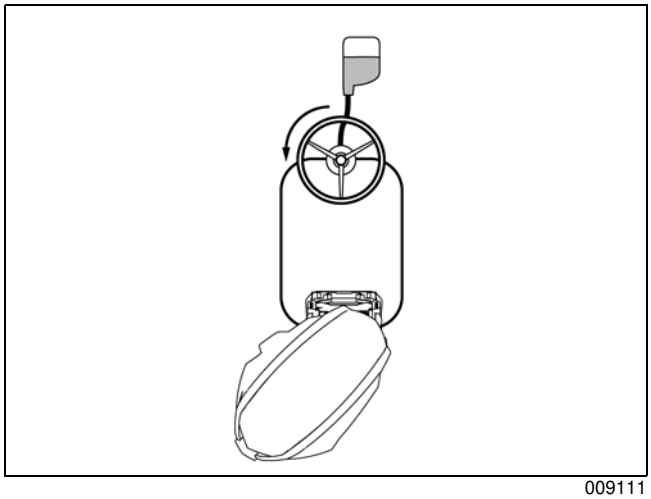
IMPORTANT: Make sure the engine is trimmed to the full DOWN position before beginning this procedure. Air will NOT bleed completely from the steering system if the engine is even slightly trimmed up.

1. Remove the filler cap from the helm.
2. Install the threaded end of the filler tube (supplied with helm) into the helm.
3. Fill the helm with the recommended fluid. Fluid should always be visible in the filler tube. Use additional bottles of fluid as needed. Do NOT proceed with the next step until the helm is full of fluid.
4. Turn the steering wheel clockwise until engine is turned fully to STARBOARD and resistance is felt. Be sure to maintain fluid level at the helm/reservoir.



009110

5. Turn the steering wheel counter–clockwise until engine is turned fully to PORT and resistance is felt. Be sure to maintain fluid level at the helm/reservoir.

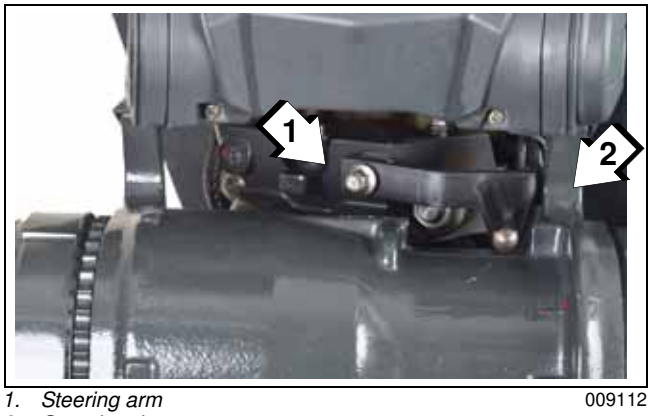


009111

6. Install the Steering Lock Tool, P/N 357717, to hold engine in full PORT turn.

Steering Lock Tool, P/N 357717 357717

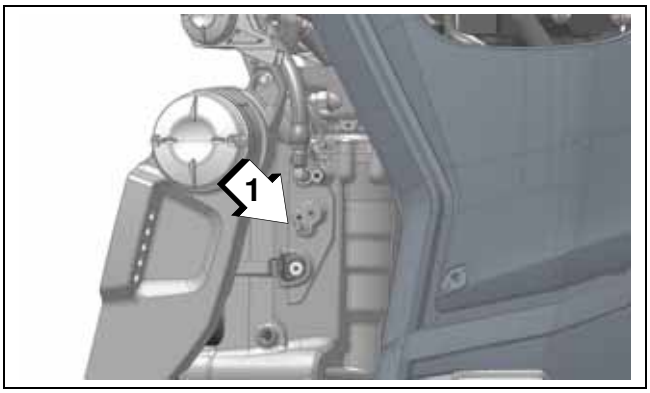
7. Use a shipping bracket screw to attach the long end of the steering lock tool to the steering arm.
   Attach the short end of the tool to the stern bracket using the provided nut and washer.



1. Steering arm 009112
2. Stern bracket

Attach a length of clear hose to the LOWER bleed valve. Use an appropriate container to catch fluid flowing from the bleed valve.

8. Open the LOWER bleed valve **one–half** turn. Then turn the steering wheel clockwise.
   – Continue turning the steering wheel clockwise until there are no air bubbles present in the flow of fluid coming out of the bleed valve.
   – Be sure to maintain fluid level at the helm/reservoir.

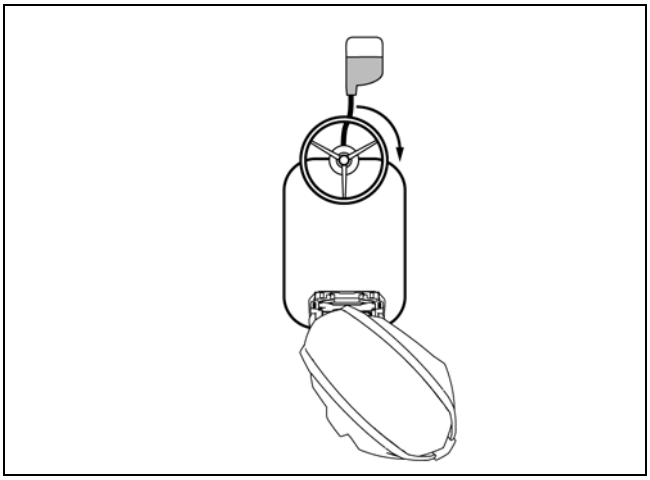


1. Lower bleed valve 009109

9. Close the LOWER bleed valve.

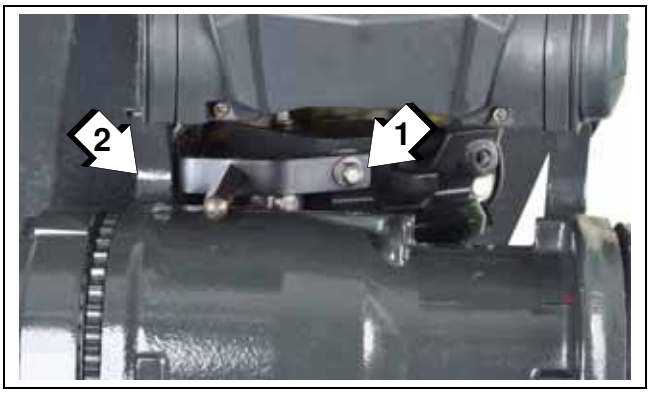
10. Then remove the steering lock tool.

11. Turn the steering wheel clockwise until engine is turned fully to STARBOARD and resistance is felt. Be sure to maintain fluid level at the helm/reservoir.



009110

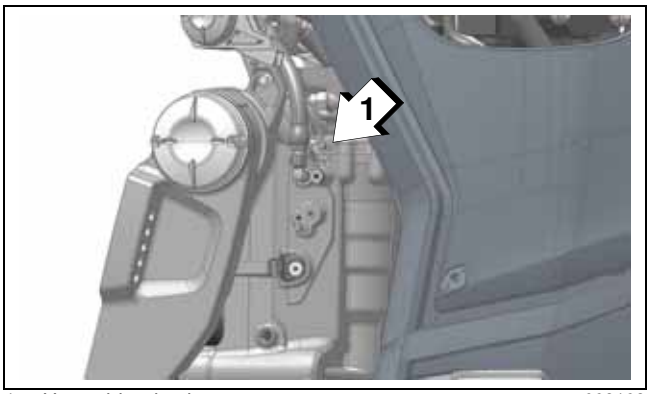
12.Install the steering lock tool, P/N 357717, to hold engine in full STARBOARD turn.



1. Steering arm
2. Stern bracket
009113

Attach the length of clear hose to the UPPER bleed valve.

13.Open the UPPER bleed valve **one–half** turn. Then turn the steering wheel counter–clockwise.
– Continue turning the steering wheel counter–clockwise until there are no air bubbles present in the flow of fluid coming out of the bleed valve.
– Be sure to maintain fluid level at the helm/reservoir.



1. Upper bleed valve
009109

14.Close the UPPER bleed valve.

15.Tighten both bleed valves to a torque of 84 to 120 in.lb. (9.5 to 13.5 N·m).

16.Remove the steering lock tool.

17.Remove the filler tube from the helm. Install the fill cap on the helm, tighten securely.

18.Proceed to **Steering System Checks** on p. 80.

Single Station / Multiple Engine Installations

Filling and bleeding multiple engine installations is similar to single engine installations.

Follow the instructions starting on page 76, in this order:

- Complete steps 1 through 7.
- Starting with the STARBOARD engine, perform steps 8 and 9.
- Leave the steering lock tool in place.
- Repeat steps 8 and 9 on each engine:
  – Bleed one engine at a time.
  – Work on engines from starboard to port until the LOWER bleed valve on all engines has been bled.
- Proceed with steps 10 through 12.
- Starting with the STARBOARD engine, perform steps 13 and 14.
- Leave the steering lock tool in place.
- Repeat steps 13 and 14 on each engine:
  – Bleed one engine at a time.
  – Work on engines from starboard to port until the LOWER bleed valve on all engines has been bled.
- Complete the process with steps 15 through 18.

Power Purge Method

A *Teleflex Power Purge* system, P/N 768014, can be used to bleed the steering system.

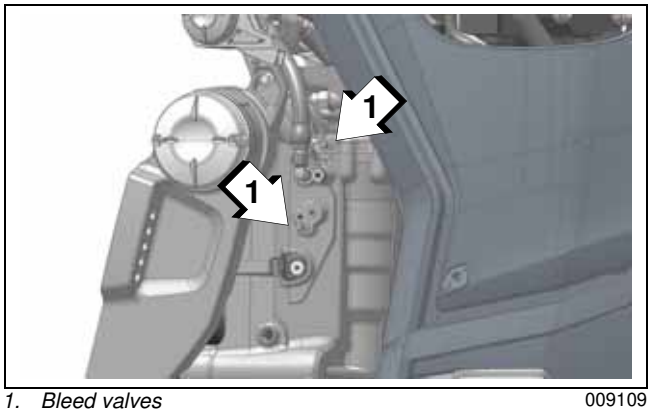
Teleflex Power Purge Jr.
009114

Make sure the purging unit has the correct hydraulic fluid. See **Hydraulic Steering Fluid** on p. 76. Purge the steering system manually if the fluid in the purging unit is a non-approved or unknown type. See **Manual Method** on p. 76.

IMPORTANT: Turn the key switch to the ON position for models with DPS.

If installing dual outboards a *Teleflex Dual Cylinder Purging Kit*, P/N 768015, is also required.

1. Remove the fill cap from the helm. Connect the hydraulic fluid supply line of the purging unit to the helm.
2. Connect the hydraulic fluid return lines of the purging unit to the two bleed valves of the steering system.

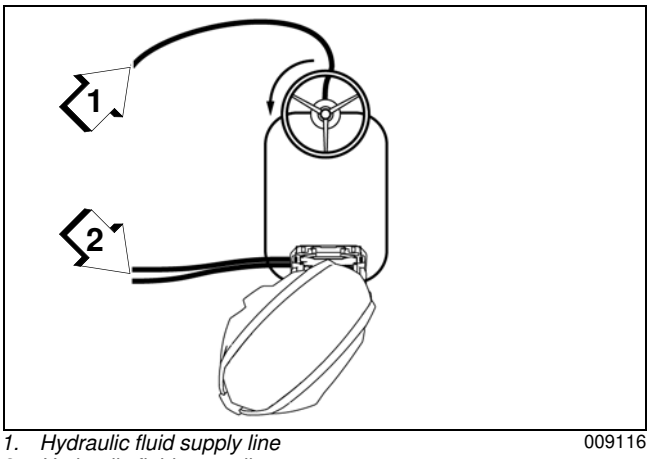


1. Bleed valves 009109

3. Loosen both bleed valves **one-half** turn. Then turn the purge unit ON.

After air bubbles are no longer visible:

4. Turn the steering wheel counter–clockwise until engine is turned fully to PORT and resistance is felt.

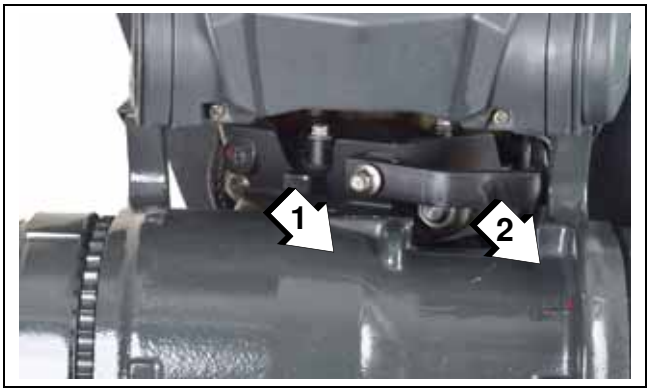


1. Hydraulic fluid supply line 009116
2. Hydraulic fluid return lines

5. Install the steering lock tool, P/N 357717, to hold engine in full PORT turn.

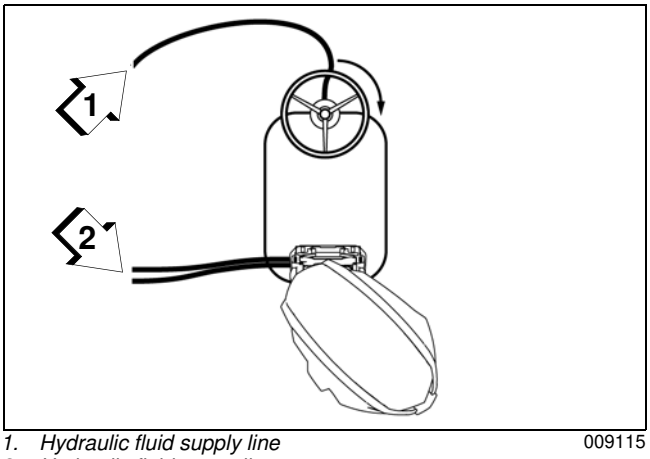
Steering Lock Tool, P/N 357717 357717

6. Use a shipping bracket screw to attach the long end of the steering lock tool to the steering arm.
   Attach the short end of the tool to the stern bracket using the provided nut and washer.



1. Steering arm 009112
2. Stern bracket

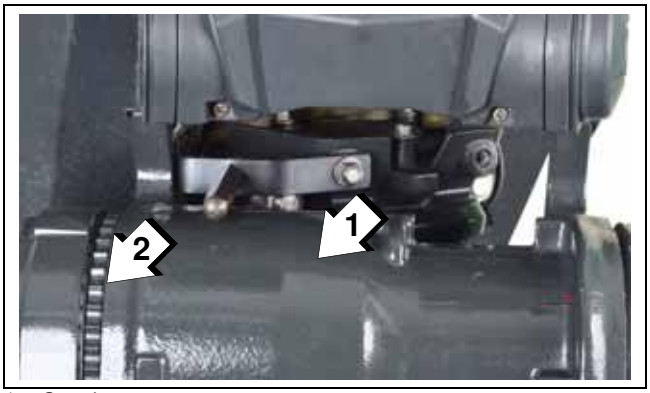
6. Rotate the steering wheel both clockwise and counter–clockwise until air bubbles are no longer visible.
7. Remove the steering lock tool.
8. Turn the steering wheel clockwise until engine is turned fully to STARBOARD and resistance is felt.



1. Hydraulic fluid supply line 009115
2. Hydraulic fluid return lines

9. Install the steering lock tool, P/N 357717, to hold engine in full STARBOARD turn.

Use a shipping bracket screw to attach the long end of the steering lock tool to the steering arm. Attach the short end of the tool to the stern bracket using the provided nut and washer.



1. Steering arm 009113
2. Stern bracket

10. Rotate the steering wheel both clockwise and counter–clockwise until air bubbles are no longer visible.
11. Tighten both bleed valves to a torque of 84 to 120 in.lb. (9.5 to 13.5 N·m). Then turn the purge unit OFF.
12. Disconnect the return lines of the power purge from the two bleed valves of the steering system.
13. Disconnect the hydraulic fluid supply line of the power purge from the helm.'
14. Install the fill cap on the helm, tighten securely.
15. Perform **Steering System Checks**.

Steering System Checks

1. Turn steering wheel to PORT. After engine is turned fully to PORT, apply enough force to the steering wheel to exceed the pressure relief valve pressure of the helm.
2. While pressure is maintained on helm, check all PORT lines and fittings for leaks.
3. Turn steering wheel to STARBOARD. After engine is turned fully to STARBOARD, apply enough force to the steering wheel to exceed the pressure relief valve pressure of the helm.
4. While pressure is maintained on helm, check all STARBOARD lines and fittings for leaks.
5. Repair all leaks. Repeat steps 1 through 4 before continuing.
6. Cycle the steering system from full PORT turn to full STARBOARD turn several times. Definite resistance should be felt when the steering wheel is turned full PORT or full STARBOARD.

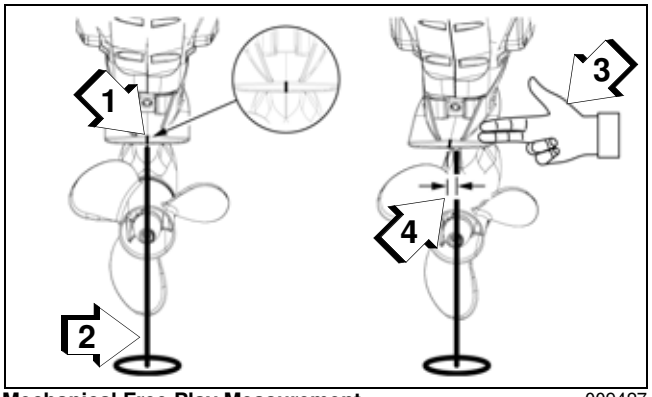
IMPORTANT: If definite resistance is NOT felt, or if steering feels loose or "soft" wait 15 minutes and repeat the bleeding process.

7. Check the fluid level of the helm pump and fill per the manufacturers recommendation.
8. Check mechanical free play.

Some free play movement of the steering system is normal. To check mechanical free play:

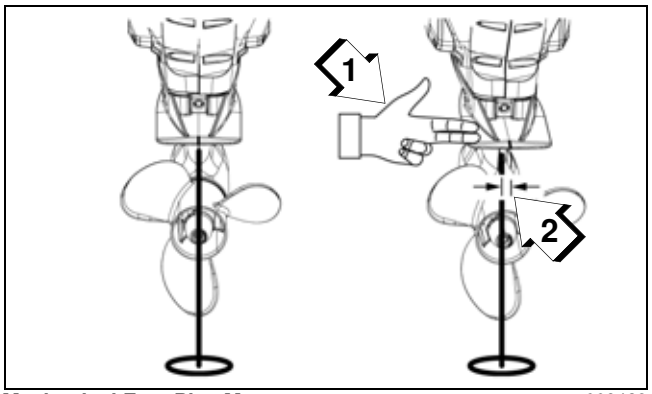
- Make sure the anti-ventilation plate of the gearcase is approximately level.
- Make a mark in the center/rear of the anti-ventilation plate of the gearcase.
- Center a stationary object, such as a length of threaded rod attached to a plate, behind the mark on the gearcase to serve as a reference point.

- Use two fingers to push the gearcase to port.
- Measure and record the distance between the mark and the reference point.



Mechanical Free Play Measurement 009427
1. Mark
2. Reference point object
3. Push against gearcase
4. Measurement

- Use two fingers to push the gearcase to starboard.



Mechanical Free Play Measurement 009428
1. Push against gearcase
2. Measurement

- Measure and record the distance between the mark and the reference point.

Add the measurements. The result should not exceed approximately 0.59 in. (15 mm).

If the result exceeds this dimension, additional bleeding may be required. Push the gearcase to port, until the steering mechanism bumps the mechanical stop. Then push steadily with increasing force. Repeat to starboard. Definite resistance should be felt in both directions. If after bumping the mechanical stop the gearcase continues to move in the direction it is being pushed, or it feels loose or “soft” repeat the bleeding process.

Notes

Technician's Notes

Related Documents

Bulletins	
Instruction Sheets	
Other	

Fuel and Oil

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5

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.

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.

NOTICE

Always use fresh gasoline. Gasoline will oxidize; the result is loss of octane, volatile compounds, and the production of gum and varnish deposits which can damage the fuel system.

ENVIRONMENTAL NOTE:

Dispose of contaminated shop rags according to local environmental regulations.

Fuel blending varies by country and region. Your outboard has been designed to operate using the recommended fuels; however, 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 blended fuels attract and hold moisture which may lead to fuel phase separation and can result in engine performance problems or engine damage.
- Use of fuel containing alcohol above the percentage specified by government regulation can result in the following problems in outboard engines and fuel system components:
  - Vapor lock or fuel starvation
  - Starting and operating difficulties
  - Deterioration of rubber or plastic parts
  - Corrosion of metal parts
  - Damage to internal engine parts
- Inspect frequently for the presence of fuel leaks or other fuel system abnormalities if you suspect the presence of alcohol in gasoline exceeds the current government regulations.

Recommended Fuel

Use unleaded gasoline with an AKI (R+M)/2 octane rating of 87, or an RON octane rating of 90.

Use in North America

NOTICE

Do NOT use fuel from fuel pumps labeled E85. Never experiment with other fuels.

The use of unleaded gasoline containing alcohol above the percentage specified by government regulations is not recommended. Use of fuel labeled E15 is prohibited by U.S. EPA Regulations.

Use of a boat mounted water-separating fuel filter is strongly recommended.

Biobutanol Blended Fuel

Biobutanol blended fuel (Bu16), up to 16.1% by volume has been approved for use. Refer to Service Bulletin 2015-13(S).

Use Outside North America

The use of unleaded gasoline containing alcohol above the percentage specified by local government regulations is not recommended.

Use of a boat mounted water-separating fuel filter is strongly recommended.

Additives

The only fuel additives approved for use in *Evinrude E-TEC* outboards are:

- *Evinrude 2+4®* fuel conditioner
- *Evinrude* Fuel System Cleaner.

NOTICE

Use of other fuel additives can result in poor performance or engine damage.

Evinrude 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 Fuel System Cleaner will help keep fuel injectors 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.

Evinrude E-TEC G2 models are equipped with an electric fuel lift pump. The electric fuel lift pump runs continuously.

Make sure the battery is fully charged and reads a minimum of 12 VDC. Turn the Master Power / Key Switch to the ON position to start the fuel priming process.

The high-pressure fuel circuits and injectors will prime as the outboard is cranked with the starter.

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

NOTICE

If the outboard will be operated in temperatures below freezing (32°F, 0°C), *use Evinrude XD100*.

Recommended Lubricants

NOTICE

Failure to follow these recommendations could void the outboard warranty if a lubrication-related failure occurs.

Evinrude XD100, or XD50 outboard oils are recommended for use in *Evinrude E-TEC* G2 outboards. If these oils are not available, use a TC-W3 certified SYNTHETIC oil.

Evinrude XD100 outboard oil is recommended for all conditions and applications.

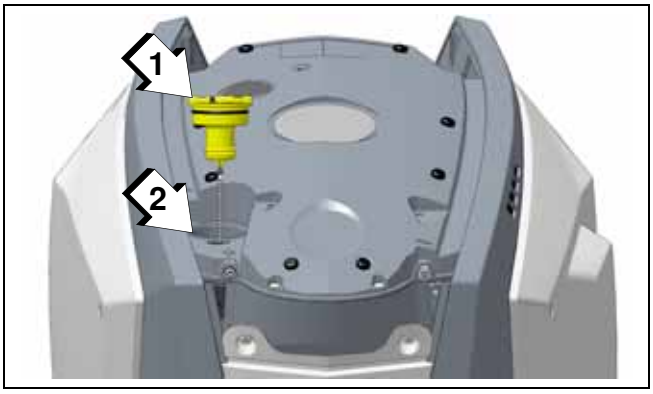
Filling the On-Engine Oil Tank

OIL CAPACITY

66° V6 Models:	
on-engine tank only:	2.8 gallons (10.6 Liters)
with remote oil tank:	2.0 gallons (7.5 liters)
74° V6 Models	
on-engine tank only:	2.0 gallons (7.5 liters)
with remote oil tank:	2.0 gallons (7.5 liters)

Trim the outboard to the vertical position to fill, or check oil level.

Remove the top cover, then the oil fill cap. Fill the oil tank with outboard lubricant.



1. Oil fill cap 009044
2. Oil fill

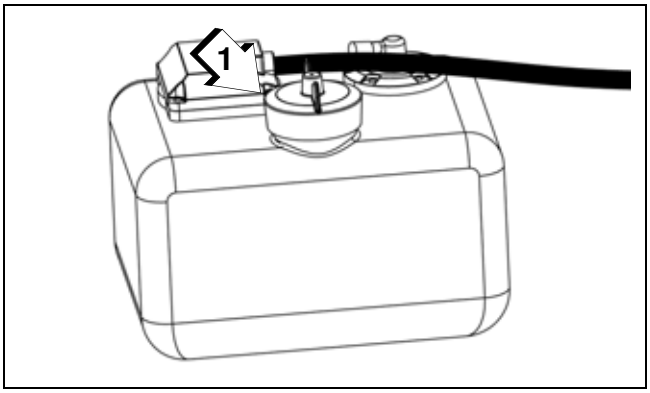
Filling the Accessory Remote Oil Tank

Remove the oil fill cap. Fill the oil tank with outboard lubricant.

Oil Capacity

Accessory remote oil tanks are available in the following capacities:

1.8 gallons (6.8 liters)
3.0 gallons (11.3 liters)
10 gallons (37.8 liters)



Typical 009088
1. Oil fill cap

Break-In Oiling

NOTICE

The operator must monitor the oil tank level to confirm oil consumption. This may require several hours of operation above idle.

IMPORTANT: DO NOT add oil in the fuel tank on *Evinrude E-TEC* models.

The Engine Management Module (*EMM*) will automatically supply extra oil to the engine for the first 2 hours above 2000 RPM

IMPORTANT: Make sure the oil tank is full and mark the oil level for reference.

Oil Supply Priming

The oil system of *Evinrude E-TEC G2* outboards is primed at the factory.

Priming the oiling system is only required if:

- The oil tank is run out of oil; or
- The oil system is disassembled for service or parts replacement.

After refilling an empty oil tank or servicing the oil system, air MUST be removed from the system before operating the outboard.

Use *Evinrude Diagnostic* software v 6.1 or higher to prime the oil system. See the correct **Service Manual**.

The oiling system on these models can also be primed using the Self-Winterizing feature if diagnostics software is not available. See the **Operator's Guide**.

Predelivery

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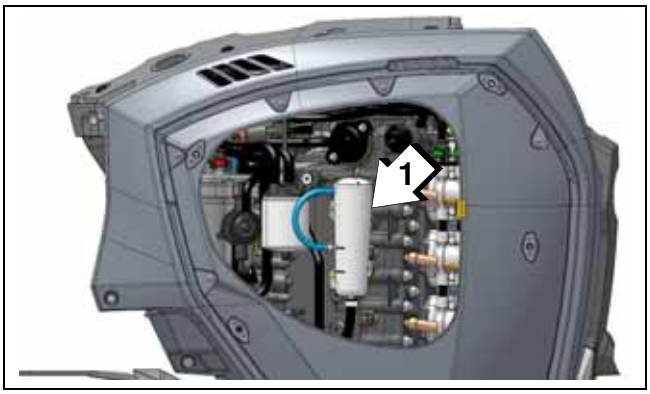
Before Start-up

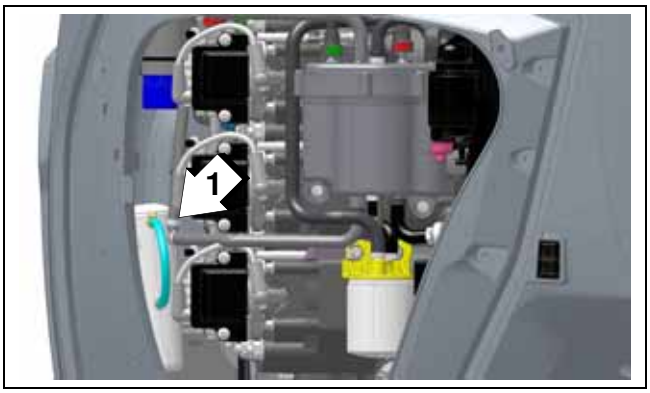
Gearcase Lubricant

With outboard vertical, check the gearcase lubricant level:

- Inspect the lubricant level in the lubricant reservoir.

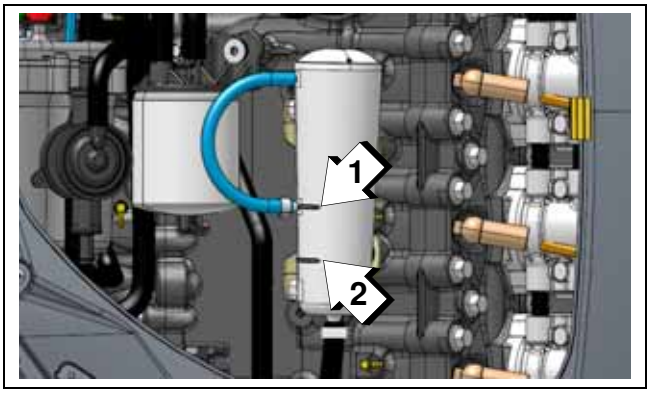


Lubricant reservoir 150 – 200 HP Models 009828
1. Lubricant reservoir



Lubricant reservoir 200 H.O. – 300 HP Models 009140
1. Lubricant reservoir

- Lubricant level should be between the marks as shown.



Lubricant Level *(150 HP shown)* 009829
1. Maximum
2. Minimum

Add *HPF PRO* gearcase lubricant if needed.

2-Stroke Engine Oil Level

Place the outboard to the vertical position to fill, or check oil level. Make sure the on-board oil tank contains an adequate supply of the correct lubricant for the outboard. Refer to **Recommended Lubricants** on p. 85.

Trim and Tilt Fluid

⚠ CAUTION

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

The trim and tilt system is filled, tested and sealed at the factory. It is **NOT** necessary to check fluid level.

Check the fluid level ONLY if the trim and tilt is NOT operating normally.

Refer to the ***Evinrude E-TEC G2*** **Service Manual** for the correct method of checking fluid level.

Multiple Outboard Installations

Outboard Alignment

Dual outboards must be connected with a tie bar and adjusted to align the outboards for correct water flow to the gearcases and propellers.

Incorrect outboard alignment could cause one or more of the following:

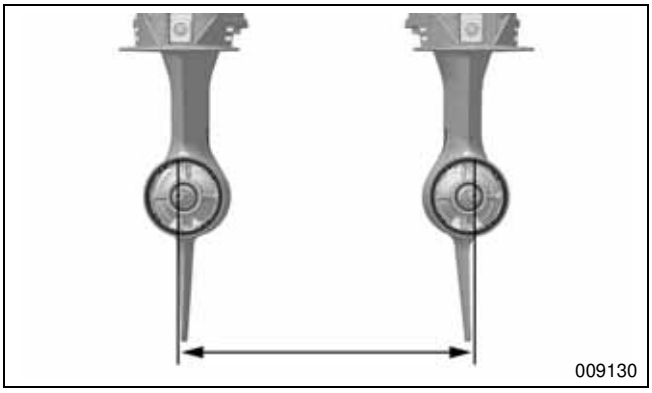
- Propeller ventilation
- Reduction of top speed
- Improper boat tracking
- Engine overheat and powerhead damage

Follow the instructions provided by the tie-bar manufacturer for tie bar installation and adjustment.

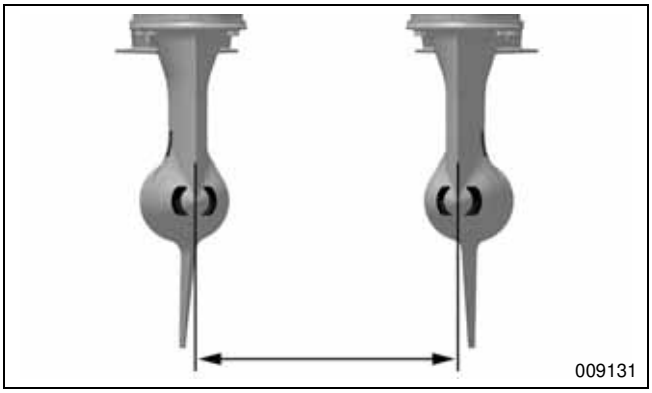
Measure Alignment

The “toe-in” (gearcase leading edges closer together than propeller shaft centers) or “toe-out” (gearcase leading edges farther apart than propeller shaft centers) is determined as follows:

- Position outboards straight with the anti-ventilation plates parallel with the bottom of the boat.
- Measure between propeller shaft centers.



- Measure between leading edges of gearcase.



Alignment Adjustment

Various boat/motor combinations respond differently to dual-outboard alignments. Each application must be thoroughly tested until the ideal combination of performance, steering, and cooling is found.

A common practice is to set-up the outboards parallel, or with a small amount of “toe-out,” and adjust inward until best results are achieved.

- A typical set-up, with outboards mounted directly on the transom, often runs best with a slight amount of “toe-in.”
- Outboards mounted behind the transom on motor brackets usually require parallel alignment or “toe-out.”

Adjust the outboard alignments by adjusting tie bar. Follow the tie bar manufacturer’s adjustment procedures.

Check steering operation. Make sure that the steering system operates properly at various trim angles.

Confirm Alignment

To confirm proper alignment, perform the following steps:

- Water test the boat.
- Monitor the water pressure for both outboards.
- Run the boat at various trim angles.
- Perform steering maneuvers and vary the throttle settings.
- Monitor boat and outboard performance.

A sudden loss of water pressure or excessive propeller ventilation on one or both outboards may indicate a misalignment of the gearcases. Reset the outboard alignment and retest.

Steering Position Sensor Calibration (DPS Models Only)

IMPORTANT: Steering Position Sensor calibration applies to the following models only:

- 66° V6, AAA and newer models
- 74° V6 AFA and newer models

⚠ WARNING

Outboards equipped with the DPS-2 system REQUIRE calibration when multiple outboards are installed. Refer to Dynamic Power Steering System Improvements on p. 23.

Failure to complete DPS system calibration can cause damage to the tie bar(s) and/or the transom of the boat due to overloading.

Use *Evinrude Diagnostics* software v 6.1 or higher to calibrate the steering position sensor.

NOTICE

For installations with two DPS equipped outboards:

- **The power steering pumps of both engines must NOT run during the calibration procedure.**
- **The diagnostics software will disable the pump for outboard being calibrated.**
- **Disconnect the battery cables at the battery for the second DPS equipped outboard.**

Failure to disable the power steering pump of the second outboard can damage the outboard and or tie bar(s).

Multiple outboard installations REQUIRE calibration of each DPS equipped outboard. Calibrate the **End Point** of both outboards FIRST. Then calibrate the **Turn Limit** of both outboards.

Calibrate End Points

NOTICE

Calibrating end points requires disconnecting the tie bar(s). During this procedure outboards could contact, resulting in damage to the engine covers. Have an assistant manually move outboards to prevent damage.

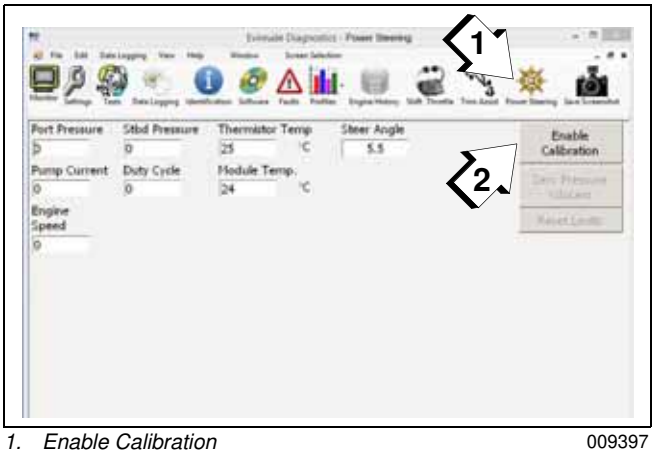
Before calibrating End Points:

- disconnect the tie bar(s) from the outboards
- in installations with two DPS outboards disconnect the battery cables at the battery for the SECOND DPS outboard

Connect the MPI-2 and adapter cable to the laptop and the *NMEA 2000* network. Turn the key switch to the ON position, then start the diagnostic program.

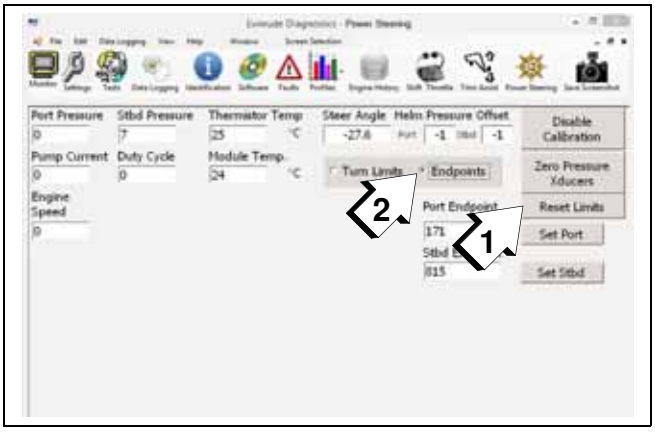
After the program connects to the network, select from the device list the *Engine Controller (EMM)* for the FIRST DPS outboard. Then select the *Power Steering* button.

1. Select *Enable Calibration*. The power steering pump is disabled while in calibration mode.



1. Enable Calibration 009397

2. Press *Reset Limits*. Then be SURE to select ***End Points***.



1. Reset Limits 009399
2. End Points

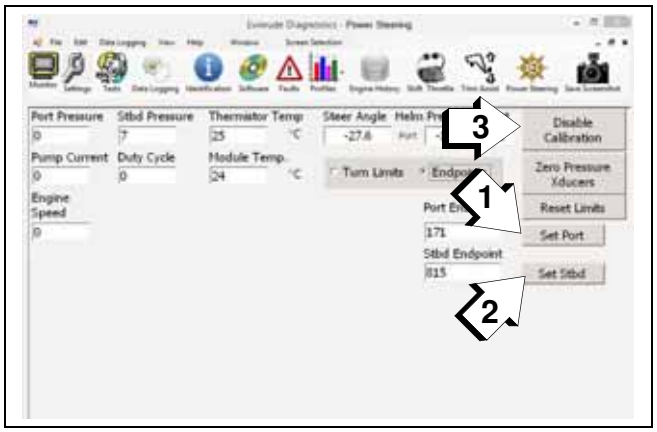
3. Slowly turn the steering wheel until the outboard is turned fully to PORT.

IMPORTANT: Make sure outboards do not contact. Slowly turn the steering wheel, while an assistant manually moves the disconnected outboards.

4. Then press the *Set Port* button. The button will deactivate while saving the PORT end point. Wait for the button to activate BEFORE continuing.
5. Slowly turn the steering wheel until the outboard is turned fully to STARBOARD.

IMPORTANT: Make sure outboards do not contact. Slowly turn the steering wheel, while an assistant manually moves the disconnected outboards.

6. Then press the *Set Starboard* button. The button will deactivate while saving the STARBAORD end point. Wait for the button to activate BEFORE continuing.
7. Select *Disable Calibration* to save the setting.



1. *Set Port* 009399
2. *Set Starboard*
3. *Disable Calibration*

Before calibrating the SECOND DPS outboard:
- turn the key switch to the OFF position.
- disconnect the battery cables at the battery for the FIRST DPS outboard
- connect the battery cables at the battery for the SECOND DPS outboard
- turn the key switch to the ON position

Start the diagnostic program. After the program connects to the network, select from the device list the *Engine Controller (EMM)* for the SECOND DPS outboard. Then select the *Power Steering* button.

8. Repeat steps 1 through 7 for the SECOND DPS outboard.

After completing end points calibration, calibrate the turn limits.

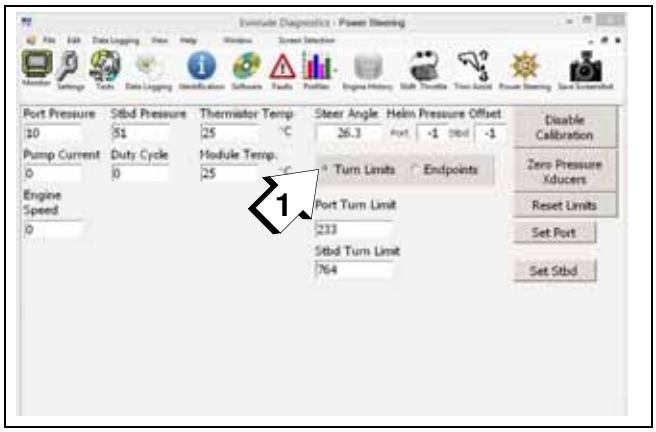
Calibrate Turn Limits

Before calibrating Turn Limits:
- connect tie bar(s) to the outboards
- adjust outboard alignment
- in 3 or 4 outboard installations disconnect the battery cables at the battery for the SECOND DPS model outboard

Turn the key switch to the ON position, then start the diagnostic program.

After the program connects to the network, select from the device list the *Engine Controller (EMM)* for the FIRST DPS outboard. Then select the *Power Steering* button.

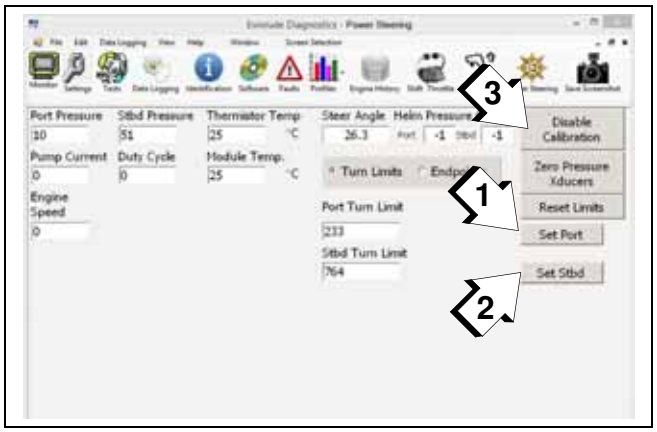
1. Select *Enable Calibration*. The power steering pump is disabled while in calibration mode.
2. Then be SURE to select ***Turn Limits***.



1. *Turn Limits* 009400

3. Turn the steering wheel until the outboards are turned fully to PORT. Then press the *Set Port* button. The button will deactivate while setting the PORT turn limit. Wait for the button to activate BEFORE continuing.
4. Turn the steering wheel until the outboards are turned fully to STARBOARD. Then press the *Set Starboard* button. The button will deactivate while setting the STARBAORD turn limit. Wait for the button to activate BEFORE continuing.

5. Select *Disable Calibration* to save the settings.



1. *Set Port*
2. *Set Starboard*
3. *Disable Calibration*

009400

Before calibrating the SECOND DPS outboard:

- turn the key switch to the OFF position.
- disconnect the battery cables at the battery for the FIRST DPS outboard
- connect the battery cables at the battery for the SECOND DPS outboard
- turn the key switch to the ON position

6. Repeat steps 1 through 5 for the SECOND DPS outboard.

Connect the battery cables at the battery, then test the steering system.

Steering System Test

Turn the steering wheel fully to PORT. The power steering pump should run, then shut OFF when the engine is turned fully to PORT.

Turn the steering wheel fully to STARBOARD. The power steering pump should run, then shut OFF when the engine is turned fully to STARBOARD.

In some installations it may be difficult to hear the power steering pump run. Use the *Power Steering* screen of *Evinrude Diagnostics* software v 6.1 or higher to monitor the pump *Current* and *Duty Cycle*.

These values should be zero when the pump is NOT running.

Propellers

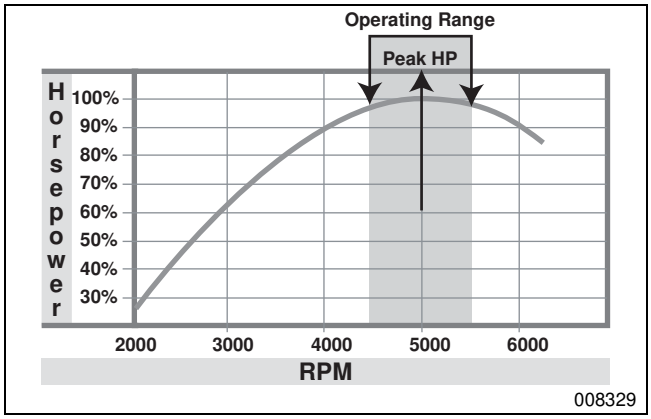
Propeller Selection

⚠ 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

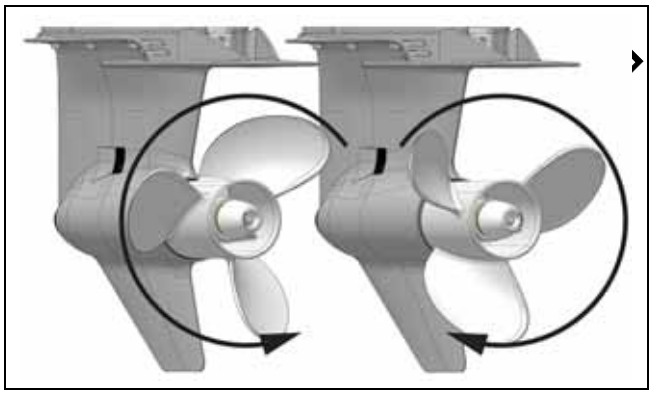
NOTICE

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 Genuine Parts and Accessories Catalog* for propeller styles and sizes.
- Right-hand propellers are considered standard rotation propellers. When propelling a boat forward, the propeller rotates in a right-hand (clockwise) direction as viewed from the rear.
- Left-hand propellers are considered counter-rotation propellers. When propelling a boat forward, the propeller rotates in a left-hand (counterclockwise) direction as viewed from the rear.



1. *Right-hand rotation (clockwise)*
2. *Left-hand rotation (counterclockwise)*

009079

⚠ WARNING

For multiple outboard installations always check to be sure propellers are installed on the correct engines before aggressively operating the boat.

Propeller Hardware Installation

⚠ WARNING

When servicing the propeller, always shift the outboard to NEUTRAL position, turn the key switch OFF and remove the key, so the outboard cannot be started accidentally.

IMPORTANT: *Evinrude E-TEC G2* outboards REQUIRE Propeller Hub Kit, P/N 767683, and Nut & Keeper Assembly, P/N 5008966.

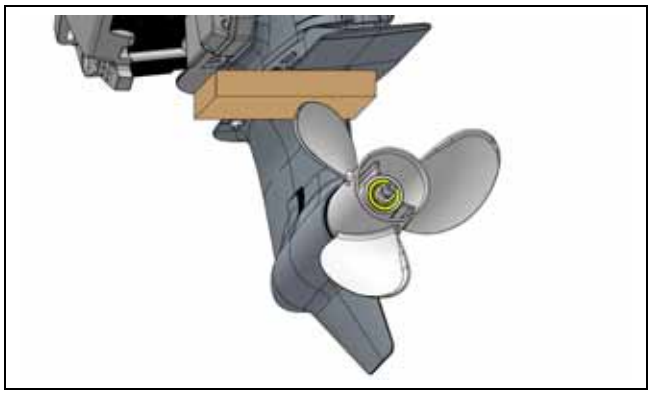
Apply *Triple Guard* grease to the entire propeller shaft before installing the propeller.

Install thrust bushing onto propeller shaft with taper of bushing matching taper of shaft. Then install the torsion bushing, and bushing and sleeve into the propeller.

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

Install the spacer over the propeller shaft splines.

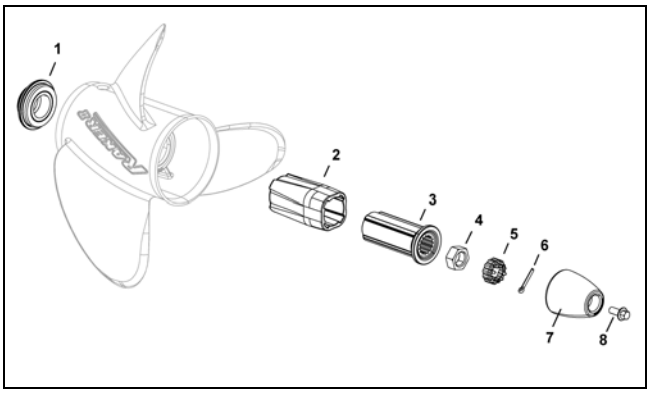
Wedge a block of wood between propeller blade and the anti-ventilation plate. Install the propeller nut. Tighten to a torque of 70 to 80 ft. lbs. (95 to 109 N·m).



009915

Install the keeper, then install a new cotter pin.

Install the anode and screw on the propeller shaft. Tighten the screw to 177 to 204 in. lbs. (20 to 23 N·m).



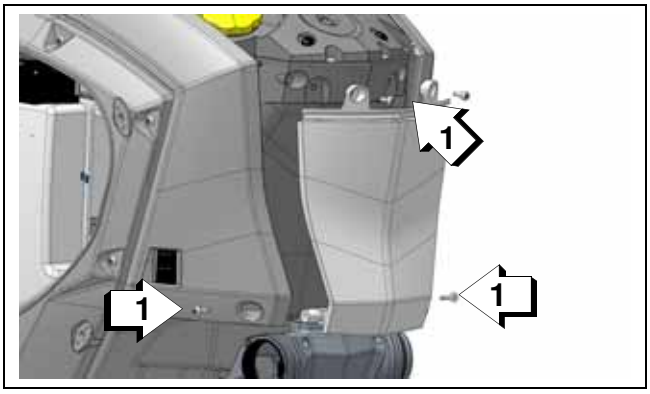
1. *Thrust bushing*
2. *Torsion bushing*
3. *Bushing and sleeve*
4. *Propeller nut*
5. *Keeper*
6. *Cotter pin*
7. *Anode*
8. *Screw*

009129

6

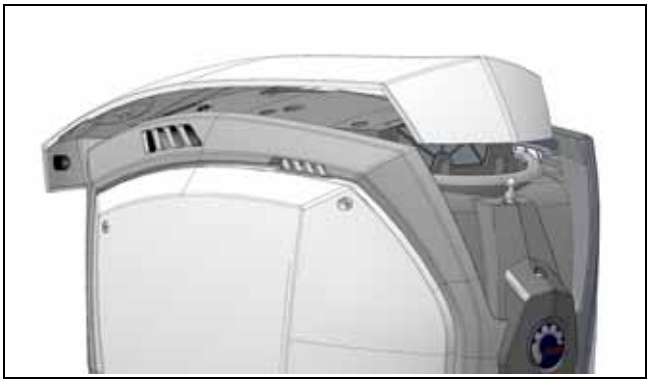
Cover Installation

Install the front cover. Install the upper screws first. Then tighten the four front cover screws.



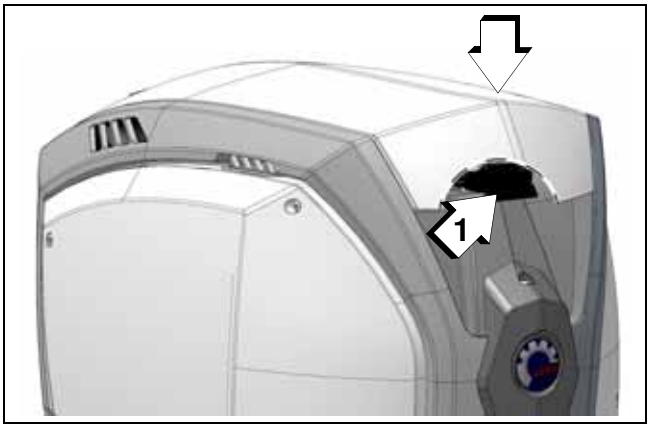
1. Screws 010266

Install the top cover.



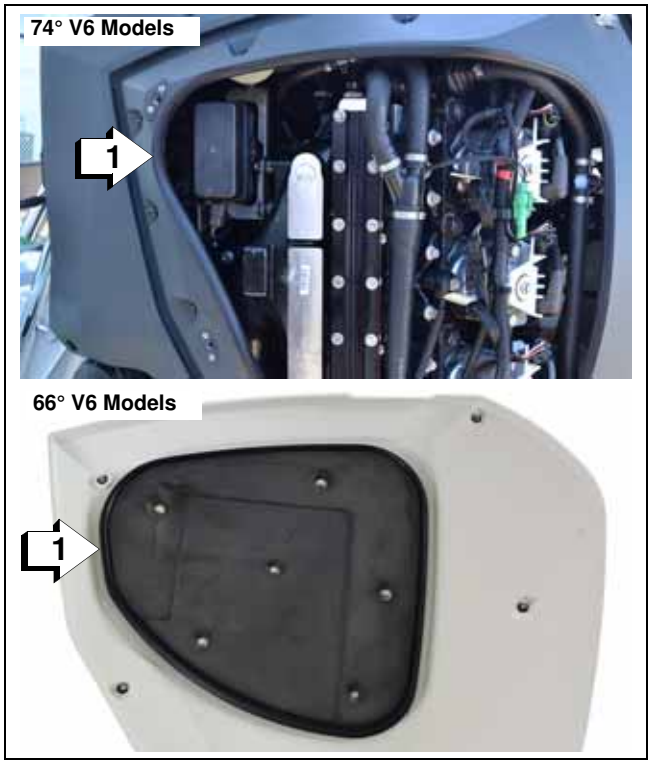
010262

Push down to secure the latch.



Top Cover (cut-away view shown) 010261
1. Latch

Use a shop towel to liberally apply Silicone Spray, P/N 775630 to port and starboard rubber seals.



1. Rubber seal 010268

Install the port and starboard covers. Tighten the screws one-quarter turn.

1. Quarter-turn screws 010264

Operational 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.

⚠ CAUTION

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

NOTICE

Remove the outboard shipping cover BEFORE running the outboard. The shipping cover does NOT provide adequate air flow to run the engine.

Remove and discard the shipping cover if it was used for to store the outboard short term.

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 the 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.

Remote Control Operation

Make sure that control can be easily moved into all gear and throttle settings.

Emergency Stop / Key Switch

Check emergency stop function. With outboard running at IDLE, pull safety lanyard from emergency stop switch. Outboard must stop immediately. If equipped, be sure to check emergency stop function of second station.

Digital Displays and Gauges

Complete basic set up of digital display or gauges. Configure engine and fuel tank, set fuel tank capacity etc. Refer to User's Guide.

Tachometer Pulse Setting (*SystemCheck*)

Confirm accuracy of tachometer reading. If needed, adjust dial on back of tachometer to 6 Pulse or 12 Pole (the outboard should not be running).

Engine Monitoring System

Attach emergency stop lanyard.

Turn key switch to the ON position.

Evinrude Touch-Screen Display — The touch screen system will run a start up sequence and then display the *Evinrude* welcome page. When the start up sequence is complete, the default digital display will appear.

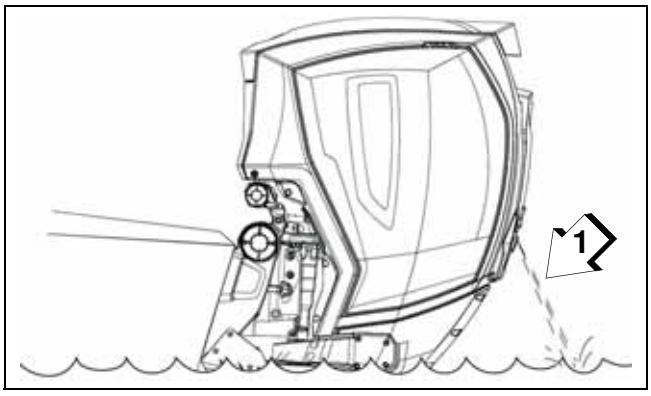
ICON — The *ICON* system self-tests by sounding a beep. The *ICON* tachometer and speedometer LCD screens display SELF TEST MODE IN OPERATION. When the self test is complete, the gauges will beep a final time and then display SELF TEST COMPLETE!

I-Command — The *I-Command* system self-tests by displaying the *Evinrude E-TEC* welcome screen, followed by the default digital display.

SystemCheck — The *SystemCheck* monitor self-tests by sounding a half-second beep. *SystemCheck* gauges self-test by turning the indicator lights on simultaneously, then off in sequence.

Water Pump Overboard Indicator

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



1. Water pump overboard indicator 009128

Operating Temperature

An outboard run at idle speed should achieve a temperature based on the engine's thermostatic control. In general, the powerhead temperature should reach at least 104°F (40°C) after five minutes of idling. Check that the powerhead reaches idle temperature.

Leaks

Perform running checks of the as follows:

- Start outboard.
- Inspect all fuel hoses and connections.
- Inspect all oil hoses and connections.
- Inspect all cooling water hoses and connections.
- Repair any leaks or misrouted hoses immediately.

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.

Break-In

Evinrude E-TEC G2 outboards require no break in. When the outboard is delivered, refer the customer to the Oiling System information in the **Operator's Guide**.

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 re-powered with new outboard(s):
- Engine mounting height
- Jack plate adjustment
- Correct propeller selection and WOT RPM
- Fuel system vacuum
- Engine water pressure/optional water screens

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.

Engine Mounting Height and Jack Plate Adjustment

Goals include:
- Engine RPM within the full throttle operating range
- Best acceleration and top speed
- No excessive ventilation while boat is coming onto plane.

Start with the engine lower on the transom. Make a test run, taking note of engine RPM, water pressure, trim level and boat speed.

Raise the engine or jack plate and repeat the process until the best acceleration and boat speed are achieved.

Fuel System Vacuum

Test fuel system vacuum. Refer to the appropriate service manual. The maximum inlet fuel vacuum should not exceed 4 in. Hg. (13.5 kPa) at the inlet to the fuel lift pump under any operating conditions (IDLE to WOT).

A higher vacuum indicates an excessive restriction in the fuel supply. Repair as needed.

Engine Water Pressure

Check engine water pressure. Confirm adequate water pressure at all engine speeds and in turns.

If water pressure falls below acceptable levels, adjust outboard mounting height or adjust outboard alignment (multiple engine installations).

Trim & Tilt

The trim and tilt functions of *Evinrude E-TEC G2* outboards are controlled by the engine *EMM*.

IMPORTANT: Activating any trim button while the key switch is in the OFF position will briefly turn on the system. This will cause the electric fuel pump to run and the remote control and any displays or gauges to turn on. There will be a short delay before the trim system operates. This is normal. The system will turn off after a few seconds of non-use.

Tilt Limit Setting

NOTICE

The tilt limit setting will not prevent the outboard from overriding the adjustment if the outboard is tilted using the manual release valve.

⚠ WARNING

If the outboard does not clear all boat parts when tilted fully or turned side to side, safety related parts could be damaged in the course of such outboard movement. Injuries could result from loss of boat control.

⚠ WARNING

Adjusting the tilt limit will NOT prevent the outboard from tilting fully and contacting the motor well if the gearcase hits an object at high speed. Such contact could damage the outboard and boat and injure boat occupants.

Check the tilt limit on all new outboard installations.

Check the clearance between outboard(s) and the boat's motor well and transom area. Tilt outboard(s) to highest point of clearance and turn the steering system lock to lock.

If the outboard contacts the boat's motor well when fully tilted, set the tilt limit to reduce full-tilt position.

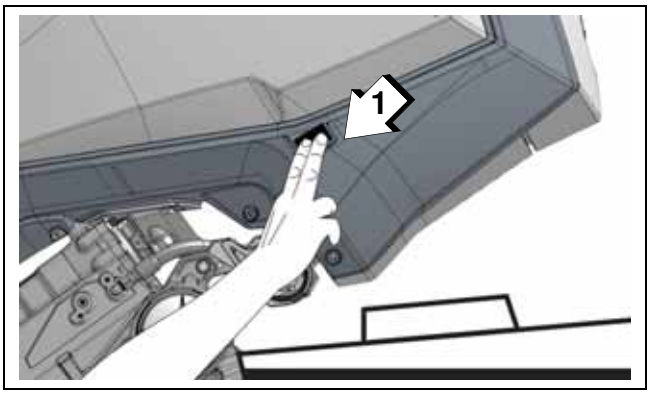
To prevent damage to equipment, provide additional motor well clearance when needed. Consider either changing the outboard mounting position or modifying the boat if the possibility for interference and damage exists.

Manual Method

You MUST use the trim switch on the starboard engine cover to set the tilt limit with this method.

Tilt the engine up to the desired maximum tilt position.

Then, simultaneously press and hold for at least three seconds, both the up and down trim buttons.



1. *Press and hold for at least three seconds, both the up and down trim buttons* 009142

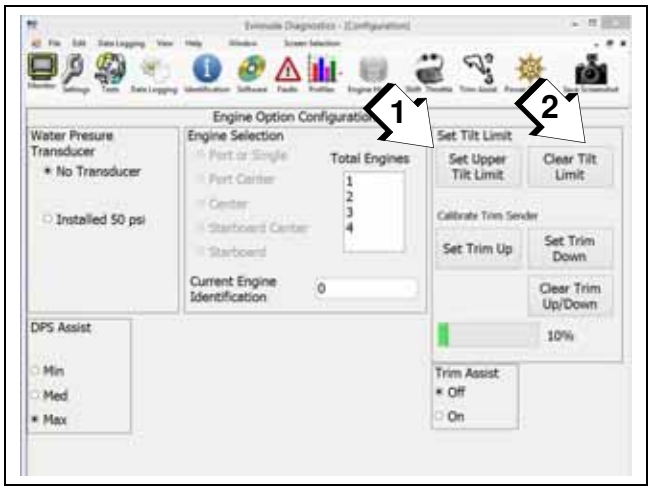
Check your adjustment — tilt the outboard fully and adjust further, if necessary. Check after each adjustment.

To change or clear this setting, tilt the engine to the full down position.

Then, simultaneously press and hold for at least three seconds, both the up and down trim buttons.

Diagnostic Software Method

Your Dealer must use *Evinrude Diagnostic* software v 6.1 or higher to limit maximum tilt-up.



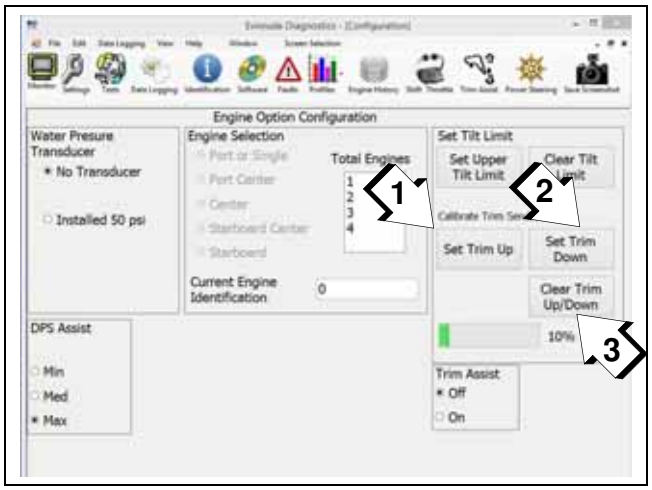
1. *Set Upper Tilt Limit* 009237
2. *Clear Tilt Limit*

Check your adjustment — tilt the outboard fully and adjust further, if necessary. Check after each adjustment.

Repeat this procedure until the tilt limit stops the outboard's upward travel before it contacts the motor well.

Trim Gauge Calibration

Observe the trim gauge. If needed, use *Evinrude Diagnostics* software v 6.1 or higher to calibrate the upper and lower trim range of the gauge.



1. *Set Upper Trim Limit*
2. *Set Lower Trim Limit*
3. *Clear Trim Limit*

009237

i-Trim

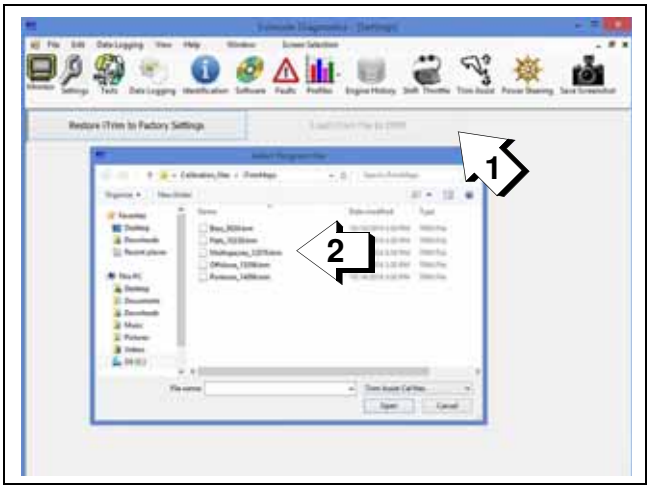
Custom *i-Trim* Settings

Custom *i-Trim* settings are available for certain applications where the factory default setting is not optimized to the application.

Use *Evinrude Diagnostics* software v 6.1 or higher to select an available custom *i-Trim* setting.

From the *Trim Assist* menu, select “Load i-Trim File to EMM”.

From the pop-up window, select the desired “.trm” file, then select the “Open” button to load the file.



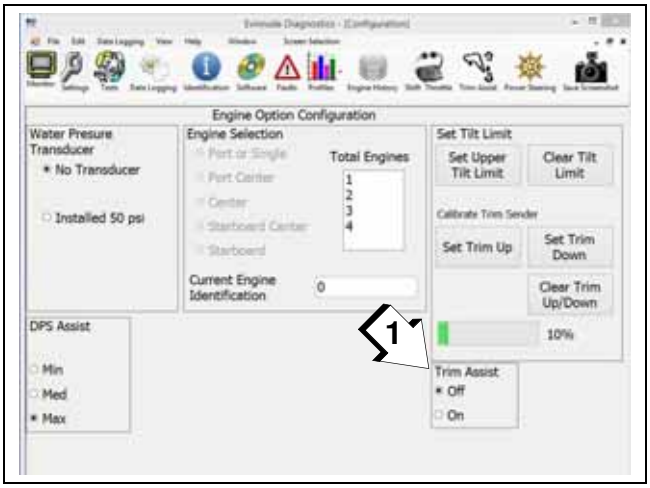
1. Load i-Trim File to EMM *button*
2. *.trm files*

009198

Operation

Evinrude E-TEC G2 outboards are equipped with *i-Trim,* an automatic trim-assist feature. By default, this feature is disabled from the factory.

Use the *Evinrude ICON-Touch* or *ICON CS* digital display to enable *i-Trim*. If the boat is not equipped with an *ICON* digital display, use *Evinrude Diagnostic* software v 6.1 or higher to enable this feature.



1. *Trim Assist*

009237

To activate the *i-Trim*:

- the key switch must be in the ON position
- use the trim/tilt switch to trim the engine to the full DOWN position.

6

During operation, the outboard will automatically trim up or down to an acceptable trim angle based on pre-programmed parameters.

Use the trim/tilt switch on the control lever to fine tune to an optimum trim angle.

IMPORTANT: Use of the trim/tilt switch to manually adjust the outboard trim angle will temporarily deactivate i-Trim.

To reactivate *i-Trim*:

- use the trim/tilt switch to trim the engine to the full down position
- bring the engine to idle speed.

Dynamic Power Steering (DPS)

Evinrude E-TEC G2 models equipped with Dynamic Power Steering (DPS), offer three power steering assist levels.

Power Steering Assist Levels

All power steering assist levels provide the same rate of assist at engine speeds below 4500 RPM.

As engine speed increases above 4500 RPM, assist levels progressively decrease.

⚠ WARNING

Selection of power steering assist level is operator preference.

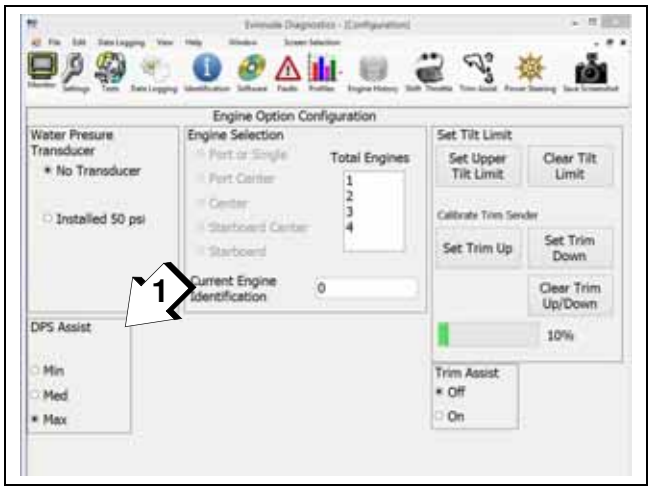
Be aware that changing the power steering assist level can affect boat handling.

After changing the level of power steering assist, operate the boat with care to become familiar with any changes in boat handling characteristics.

The factory default assist level is “Minimum”. Use the *Evinrude ICON-Touch* or *ICON CS* digital display to change the power steering assist level.

Refer to the *Evinrude ICON-Touch* or *ICON CS* user’s guide.

If the boat is not equipped with an *ICON* digital display, use *Evinrude Diagnostic* software v 6.1 or higher to change the power steering assist level.



1. DPS Assist 009143

Sample Predelivery Checklist

PREDELIVERY CHECKLIST

OB	MODEL NUMBER	SERIAL NUMBER	KEY NUMBER
1			
2			
3			
4			

IMPORTANT: Use this Checklist together with the *Evinrude E-TEC G2* Installation and Predelivery Guide. Every *Evinrude* Dealer is responsible to perform a complete predelivery inspection on all *Evinrude E-TEC G2* outboards. If an *Evinrude E-TEC G2* outboard was prerigged by the boat builder, a complete predelivery inspection is still required. Refer to the current *Evinrude E-TEC G2* Installation and Predelivery Guide for detailed instructions. Dealer predelivery programs should include additional inspections related to boat accessories and trailers.

At Time of Sale
- ☐ Explain to owner all on-product Safety Labels/Tags and the importance of reading the Operator's Guide before operating engine(s)
- ☐ Install engine Safety Labels/Tags (language chosen by customer according to availability)
- ☐ Explain the BRP Limited Warranty
- ☐ Explain selection of outboard lubricant

Owner's outboard oil selection:
☐ *XD100* ☐ *XD50*

☐ **New boat package** ☐ **Repower**
Transom height ☐20" ☐25" ☐30"

Remote Control (with start-in-gear protection)
- ☐ *Evinrude* / BRP ☐ Other
- ☐ Single lever binnacle ☐ Dual lever binnacle
- ☐ Concealed side mount ☐ Surface side mnt

•Mechanical Controls (with MCM Converter)
- ☐ *Evinrude* BRP control cables
- ☐ Other (list brand) _____
- ☐ Key switch with tether cord
- ☐ MWS harnesses

•BRP Electronic Controls
- ☐ Electronic Shift & Throttle
- ☐ Remote control harness
- ☐ Network power cable (extension - optional)
- ☐ Master power / key switch
- ☐ Buss cables
- ☐ 6-Port hubs use as needed
- ☐ Engine cut-off switch panel 2nd station
- ☐ Accessory tank connection & protective cap

Displays, Gauges and Networks
- ☐ Digital display(s)
- ☐ Network buss cables and T-connectors
- ☐ *NMEA 2000* Network terminators (2)
- ☐ Tachometer set to 6 pulse - *SystemCheck*

Outboard Installation
- ☐ Mounting height - correct shaft length?
- ☐ Transom position - 3 and 4 outboards only
- ☐ Mounting hardware - torqued?
- ☐ Water pressure transducer - installed

Steering System
- ☐ Correct helm selection (see Installation Guide)
- ☐ Fill/bleed/check hydraulic system
- ☐ Tie bar kit correctly installed (multiple engines)
- ☐ Set multi-engine alignment (toe-in/toe-out)
- ☐ Calibrate Steering Position Sensors - AFA & newer outboard models (multiple engines)

Batteries, Wiring, and Switches
Batteries: Qty. _____ CCA Rating _____
- ☐ Cable size: ____ ga. Length:_____ ft. / m
- ☐ Connections tight – NO wing nuts!
- ☐ Battery switch operation optional
- ☐ Auxiliary battery charging optional

Fuel System
- ☐ Fuel hose - "SAE J30R9 type" ☐3/8
- ☐ Fuel hoses installed with *Oetiker* clamps
- ☐ Water separating fuel filter kit recommended

Remote Oil Tank optional
- ☐ Correct installation
- ☐ Oil Hose - 25 ft. [7.6 m] maximum, no splices
- ☐ Remote oil fill kit (vent not restricted) optional

Pre-Start Up:

•Oil and Fuel Set Up, Check Fluid Levels
- ☐ Fill oil tank(s) with outboard lubricant
- ☐ Check fuel level
- ☐ Check if fuel or oil hoses are kinked
- ☐ Check gearcase lubricant level

•*Evinrude Diagnostics* Software Set Up
- ☐ Set multi-engine identity
- ☐ Calibrate trim gauge as needed
- ☐ Set tilt limit
- ☐ Set water pressure transducer (50 psi)
- ☐ Electronic shift & throttle (Dual station only) set station protect optional

•Digital Display Set Up
- ☐ Set "Engine and Fuel Tank Configuration" and "Fuel Tank Capacity" (See User's Guide)
- ☐ Set "Engine Data" (See User's Guide)

Start Up / Operational Checks
- ☐ Prime fuel system
- ☐ Check start-in-gear prevention
- ☐ Check remote control operation
- ☐ Check key switch and engine cut–off switch
- ☐ Check display/gauge operation
- ☐ Check operation of trim and tilt switches
- ☐ Water pressure / overboard indicator

Engine temperature IDLE _____☐°F or ☐°C
- ☐ No Fuel, Oil or Water leaks

Electronic Shift & Throttle Checks
- ☐ Start/Stop Switch(es)
- ☐ Engine Cut–off Switch (2nd station only)
- ☐ Neutral Throttle Switch
- ☐ RPM Switch
- ☐ Trim Switch Panel (3 or 4 engines only)

Propeller(s)
- ☐ *Evinrude* BRP
- ☐ Stainless Steel ☐ Aluminum

Diameter _____ Pitch _____
Torque _____ ☐ ft.lbs. ☐ N·m
- ☐ Cotter pin keeper and cotter pin installed

On the Water Operational Checks
Engine RPM at IDLE (in gear) _____
Engine RPM at WOT _____
Engine temperature WOT_____☐°F or ☐°C
Water pressure at IDLE _____ psi / kPa
Water pressure at WOT _____ psi / kPa
Adjust multi-engine alignment (toe-in/toe-out) as needed for optimum water pressure

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: _____

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 Dealer Signature

Date Owner / Customer

Revision B

P/N 0357899-00

Notes

Technician's Notes

Related Documents

Bulletins	
Instruction Sheets	
Other	

Index

Diagrams

A Note About Using Diagrams

When using diagrams, a typical outboard installation will use at least three diagrams. The diagrams are intended to be used as a guide. By adding accessories a fully custom installation is possible.

Review the diagrams keeping in mind the type of remote control, the number of outboards, the type of displays and other network accessories, and the steering system. Select one diagram from the following categories:

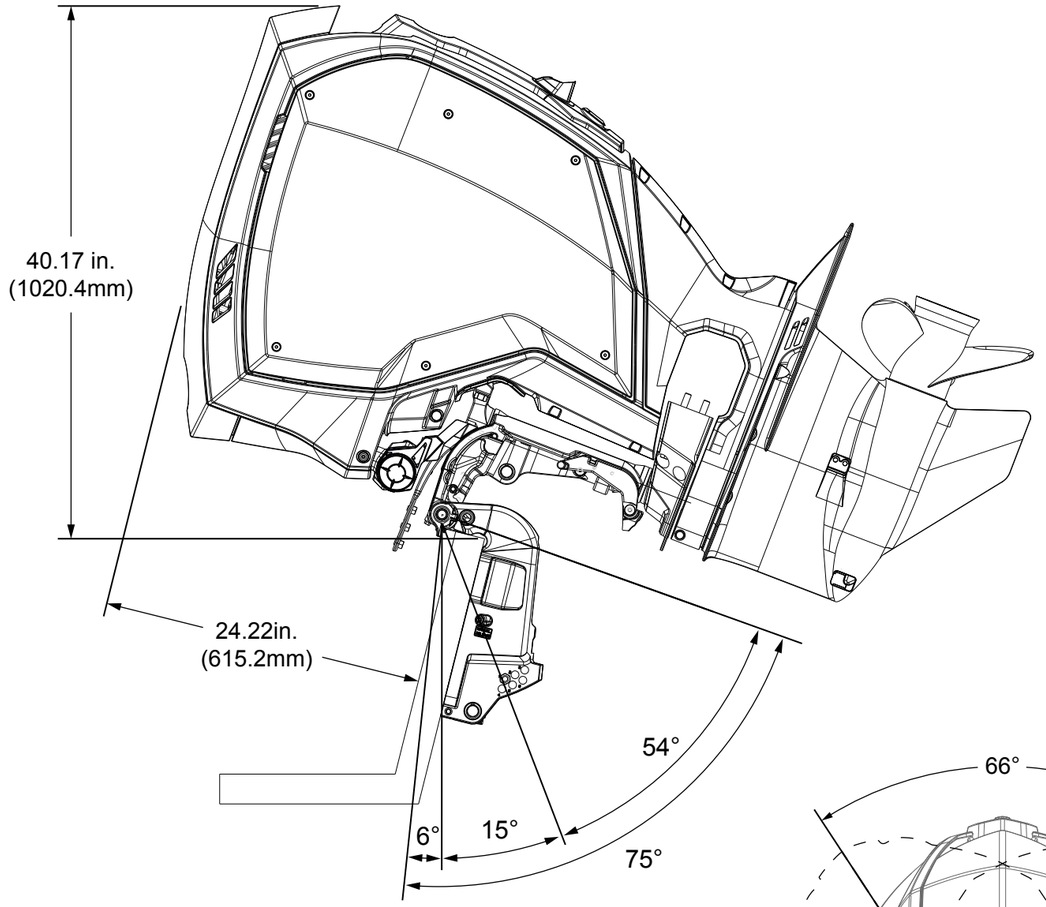
- Remote Controls
- Displays
- Hydraulic Steering

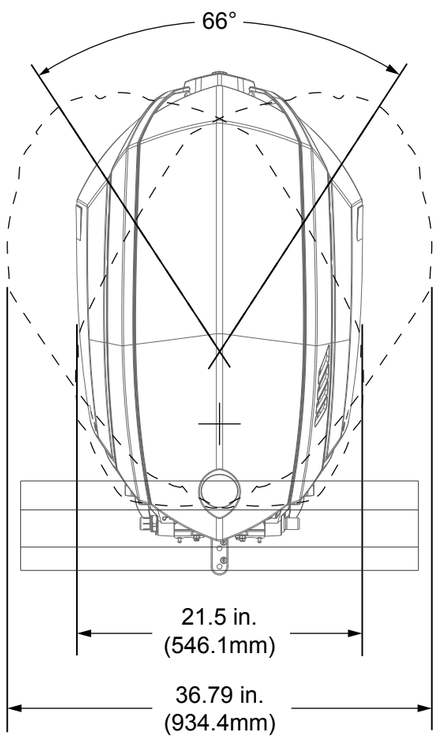
Some installations such as second stations, will require using additional diagrams.

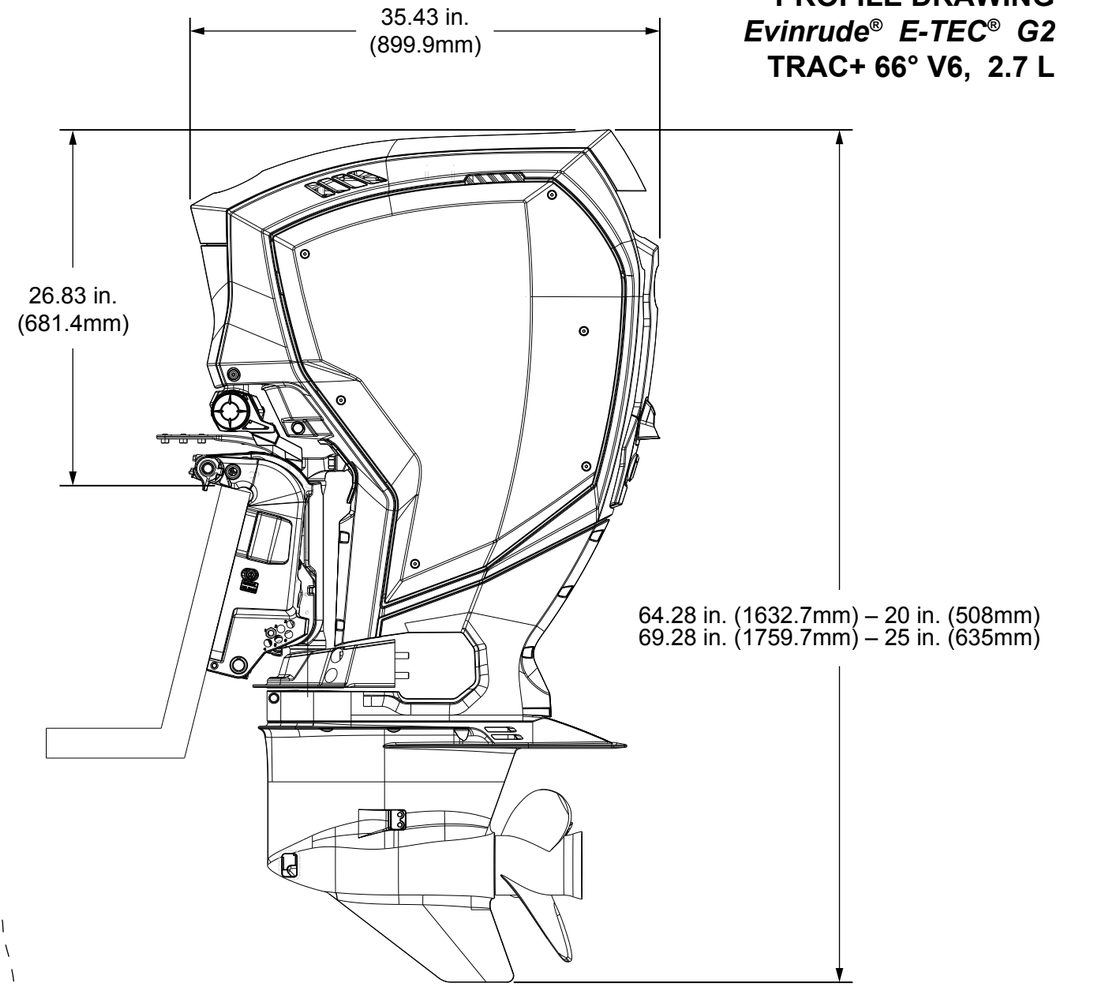
Engine Profile Drawing

66° V6 TRAC+ Midsection

PROFILE DRAWING
Evinrude® E-TEC® G2
TRAC+ 66° V6, 2.7 L







TRAC + MIDSECTION
Power Trim & Tilt
Total Range: 75°
Total Trim Range: – 6° to 21°
Total Tilt Range: 69°

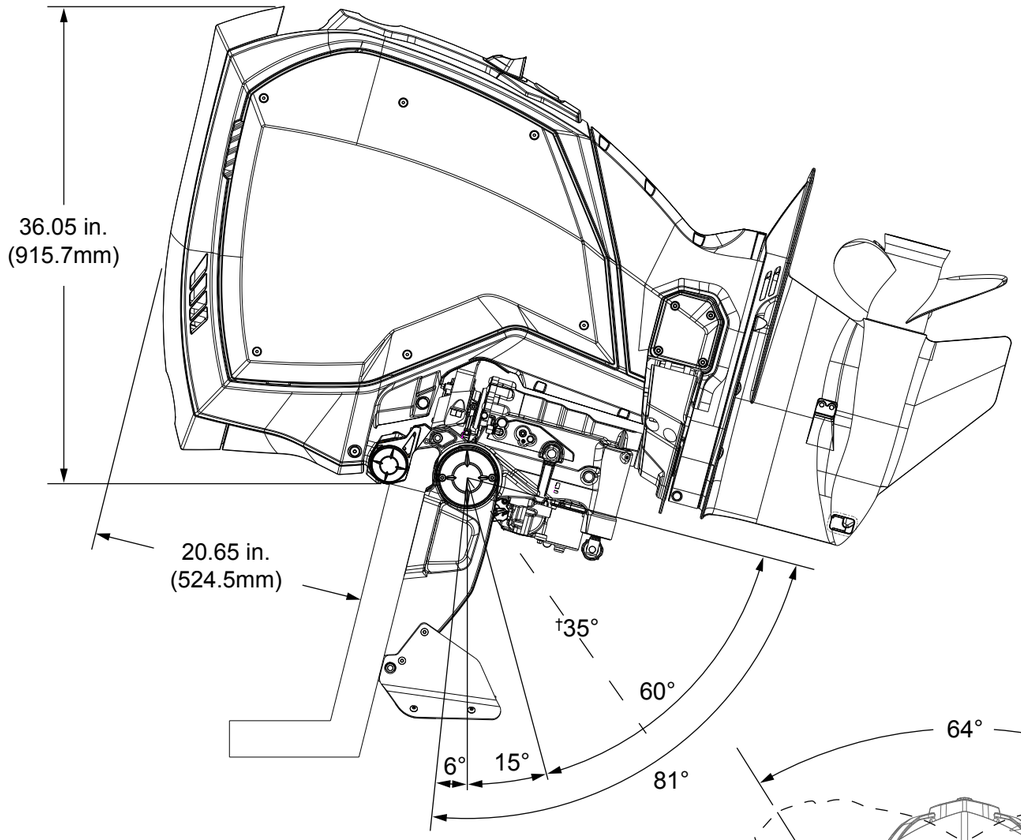
All measurements based on:
Transom Angle: 14°
Transom Thickness: 2-3/4 in. (68.58 mm) Maximum

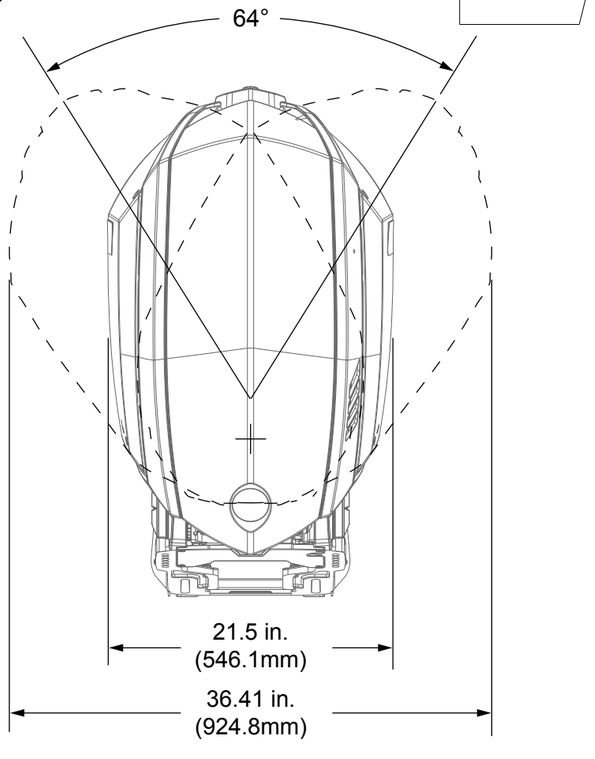
GRAPHICAL REPRESENTATION ONLY
All dimensions ± 1/4 in. (6.35 mm)

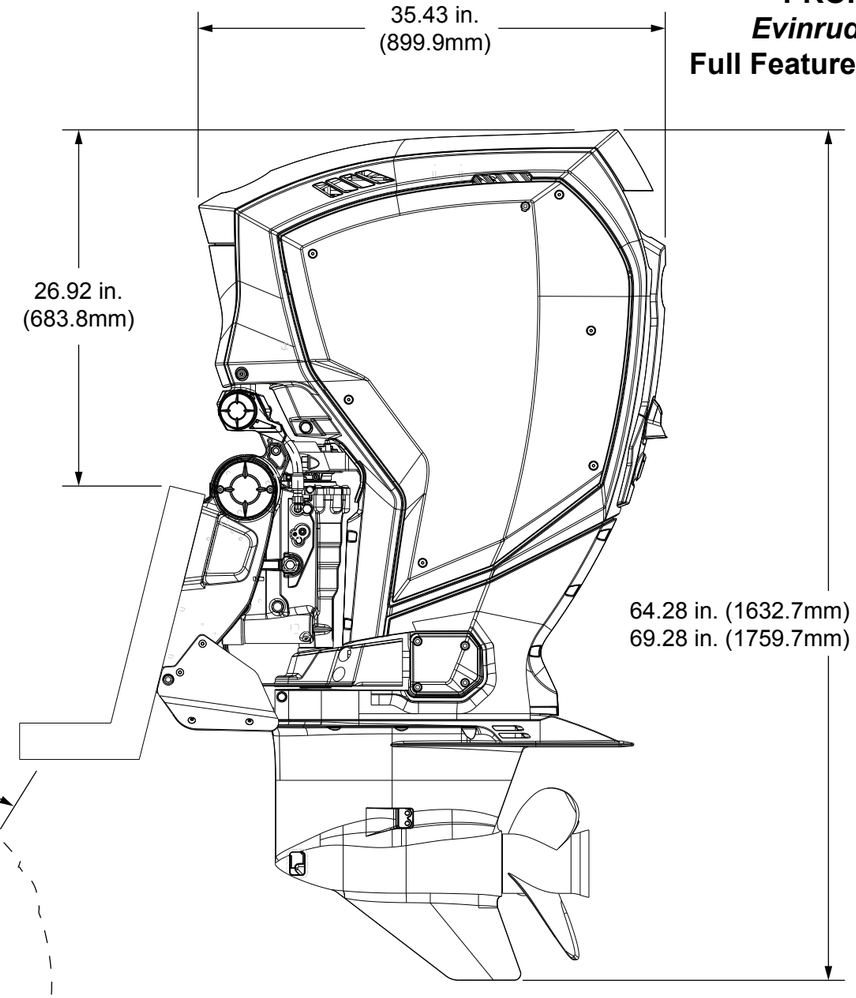
Engine Profile Drawing

66° V6 Full Featured Midsection

PROFILE DRAWING
Evinrude® E-TEC® G2
Full Featured 66° V6, 2.7 L







FULL FEATURED MIDSECTION
Power Trim & Tilt
Total Range: 81°
Total Trim Range: – 6° to 15°
†Trail Lock Position: 35°
Total Tilt Range: 54°

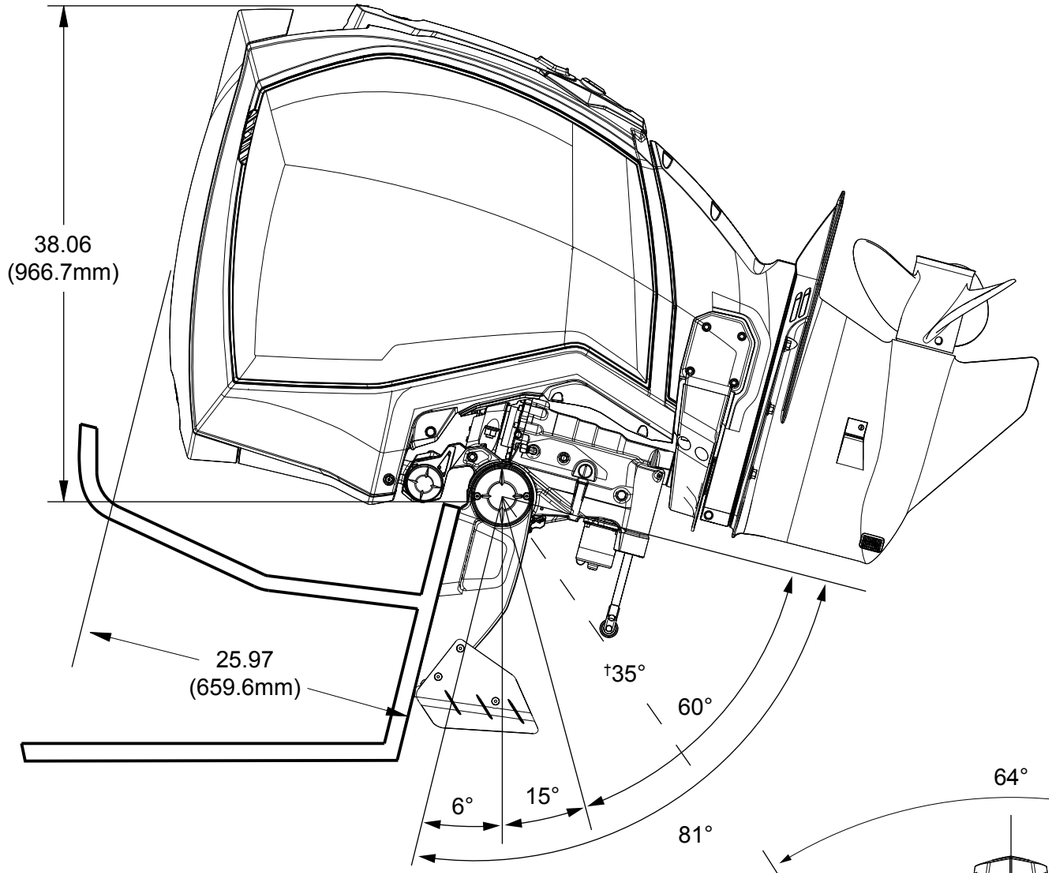
All measurements based on:
Transom Angle: 14°
Transom Thickness: 2-3/4 in. (68.58 mm) Maximum

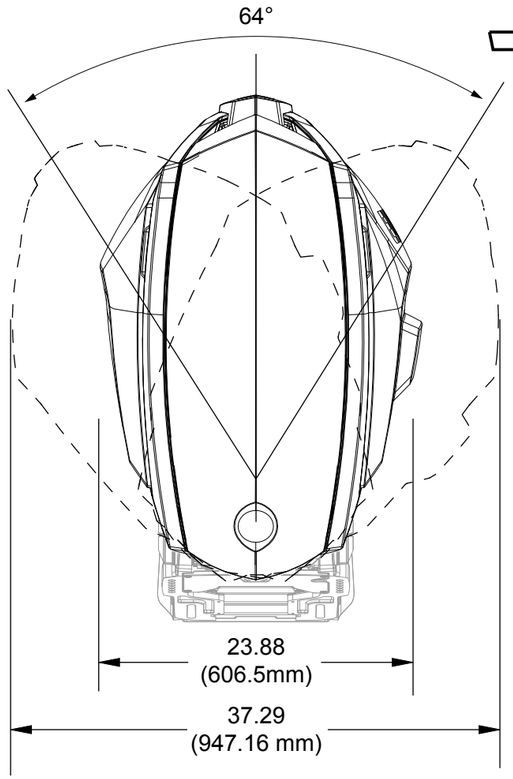
GRAPHICAL REPRESENTATION ONLY
All dimensions ± 1/4 in. (6.35 mm)

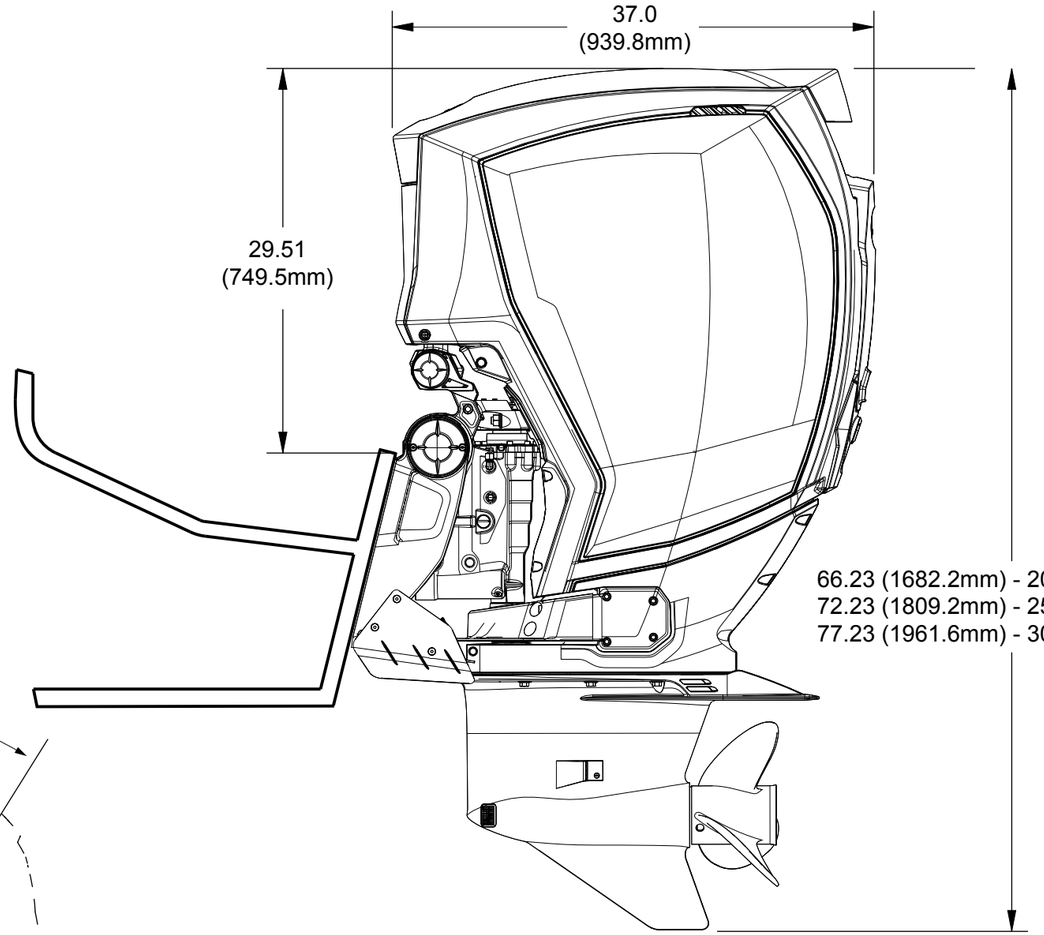
Engine Profile Drawing

74° V6 Full Featured Midsection

PROFILE DRAWING
Evinrude® E-TEC® G2
Full Featured 74° V6 3.4 L







FULL FEATURED MIDSECTION
Power Trim & Tilt
Total Range: 81°
Total Trim Range: – 6° to 15°
†Trail Lock Position: 35°
Total Tilt Range: 54°

All measurements based on:
Transom Angle: 14°
Transom Thickness: 2-3/4 in. (68.58 mm) Maximum

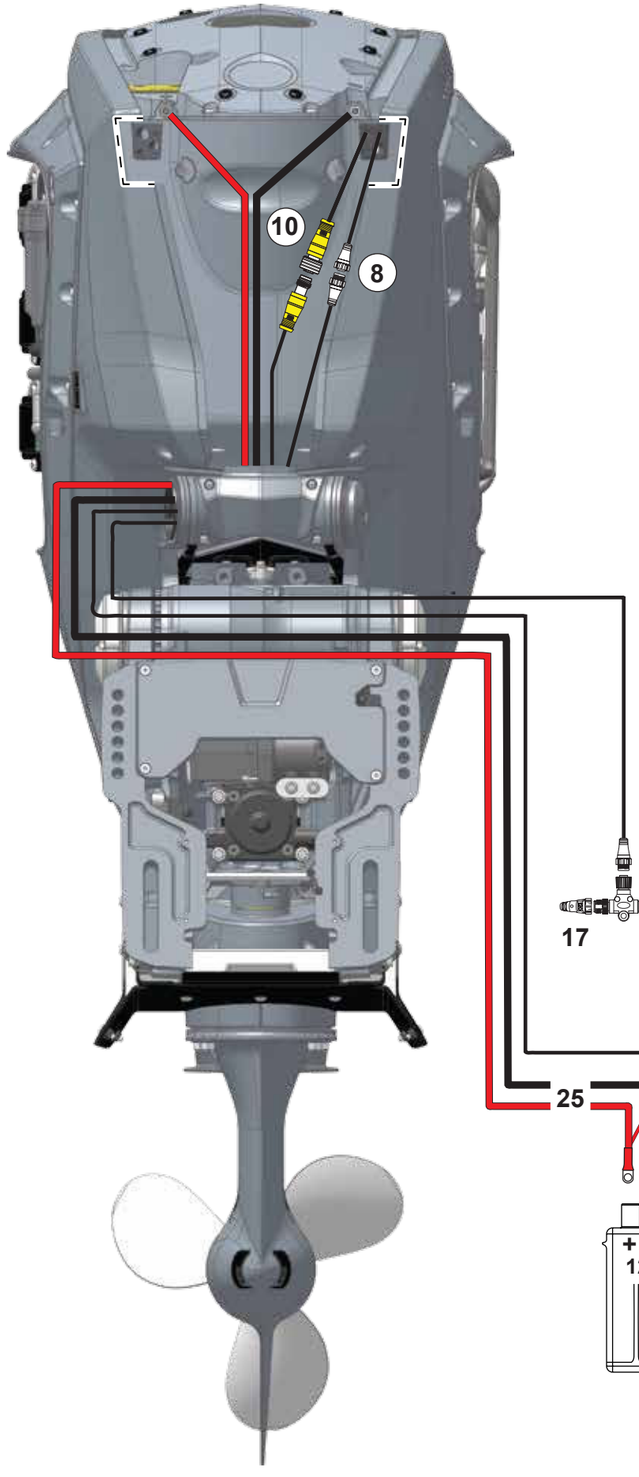
GRAPHICAL REPRESENTATION ONLY
All dimensions ± 1/4 in. (6.35 mm)

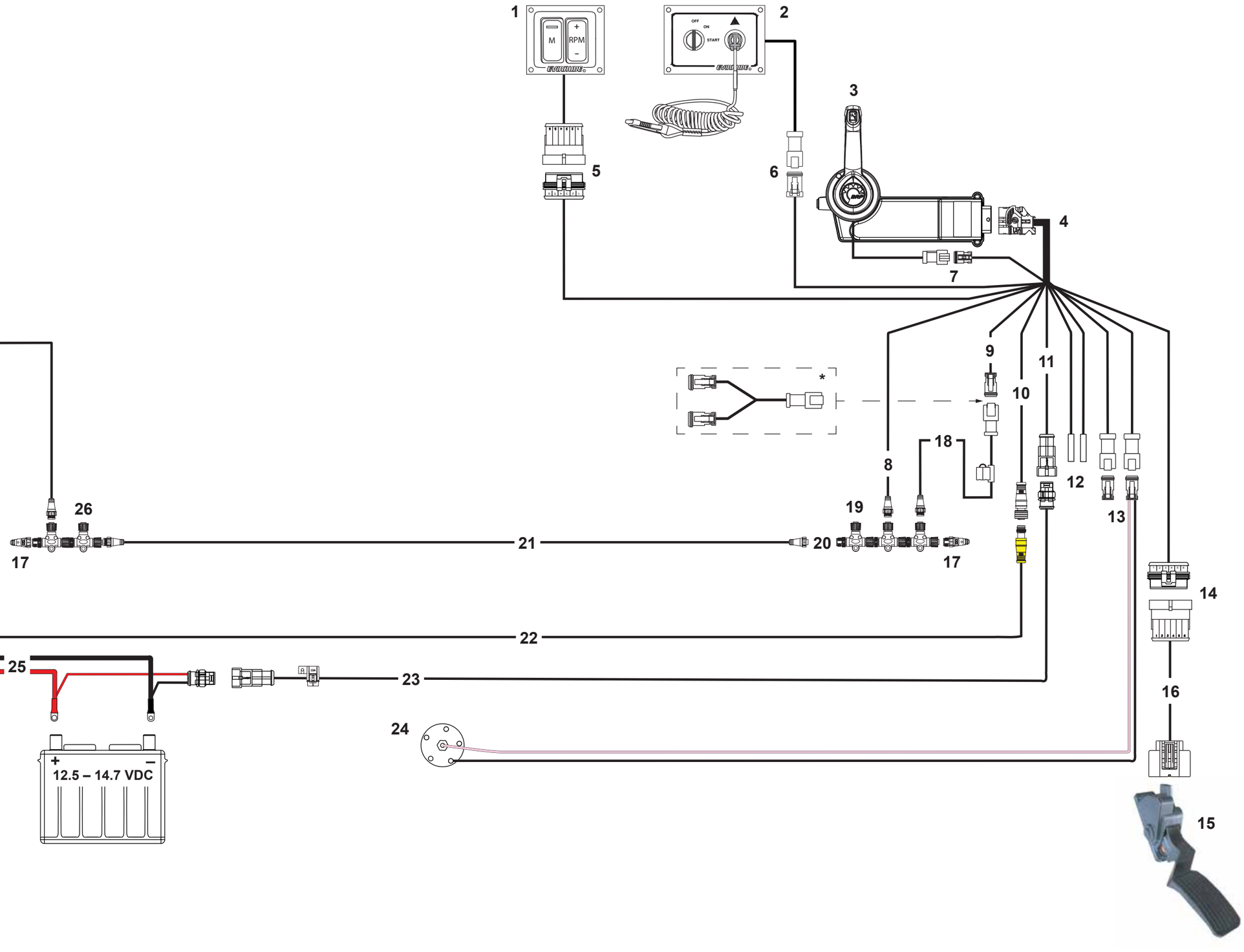
Digital Remote Controls

01 Concealed Side Mount Remote Control

Ref	Description	P/N	Notes
1	Mode Switch	766282	
2	Key Switch (OFF – ON – START)	768746	
3	Concealed Side Mount Remote Control	766553	
4	*Remote Control Harness	–	Included with Remote Control
5	Mode Switch Connection	–	
6	Key Switch Connection	–	
7	Trim Switch Connection	–	
8	Remote Control to NMEA 2000 Network Connection	–	
9	Accessory Power Out (12 VDC)	–	
10	Remote Control Network Connection	–	
11	Network Power In (12 VDC)	–	
12	Oil Level 1 & 2	–	
13	Fuel Level 1 & 2	–	
14	Connector - Accessory Foot Throttle	–	
15	Foot Throttle Kit, Bulkhead Mount	767747	Optional Accessory
16	*Foot Throttle Harness	587167	
15	Foot Throttle Kit, Floor Mount	766567	Optional Accessory
16	*Foot Throttle Harness	587167	
17	Terminator Kit	764155	
18	Power Node and Tee Kit	767433	3 Amp fuse
19	Connection to NMEA 2000 Digital Display	–	
20	Connection to NMEA 2000 Network	–	
21	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
22	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
NS	Backbone Buss Cable Extensions	–	
	1 ft. (0.3 m)	587176	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
23	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
23	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
24	Fuel Tank Sender	–	
25	Battery Cable, 10 ft. (3.0 m)	587205	
25	Battery Cable, 15 ft. (4.5 m)	587301	
25	Battery Cable, 20 ft. (6.0 m)	587302	
26	Connection to NMEA 2000 Accessories	–	GPS, Triducer, etc.
*	"Y" Harness (Optional accessory)	587230	Use to power digital displays & accessories to be powered when the key switch is ON.

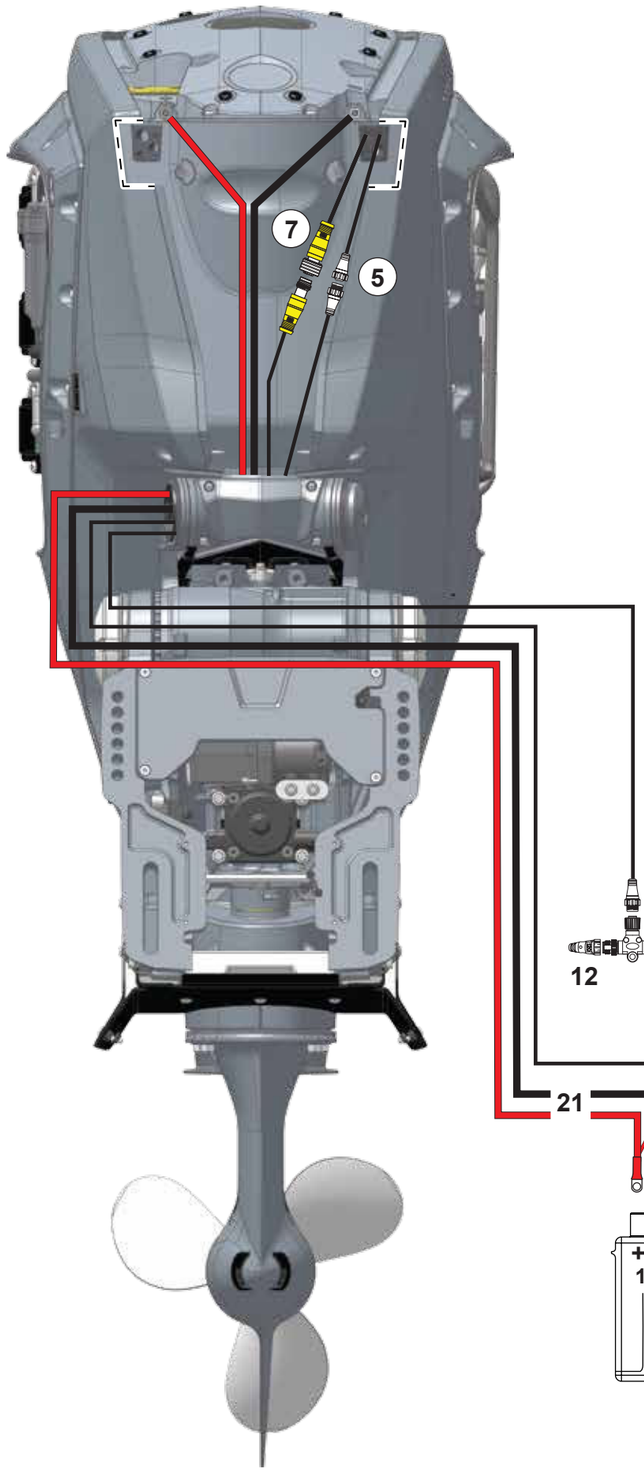
01_Digital Remote Controls – Concealed Side Mount Remote Control





02 Single Binnacle Mount Remote Control

Ref	Description	P/N	Notes
1	Key Switch (OFF – ON – START)	768746	
2	Single Binacle Mount Remote Control	766563	
3	*Remote Control Harness	–	Included with Remote Control
4	Key Switch Connection	–	
5	Remote Control to NMEA 2000 Network Connection	–	
6	Accessory Power Out (12 VDC)	–	
7	Remote Control Network Connection	–	
8	Network Power In (12 VDC)	–	
9	Oil Level 1 & 2	–	
10	Fuel Level 1 & 2	–	
11	Trim Switch Connection	–	
12	Terminator Kit	764155	
13	Power Node and Tee Kit	767433	3 Amp fuse
14	Connection to NMEA 2000 Digital Display	–	
15	Connection to NMEA 2000 Network	–	
16	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
17	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
NS	Backbone Buss Cable Extensions	–	
	1 ft. (0.3 m)	587176	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
18	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
18	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
19	Fuel Tank Sender	–	
20	Connection to NMEA 2000 Accessories	–	GPS, Triducer, etc.
21	Battery Cable, 10 ft. (3.0 m)	587205	
21	Battery Cable, 15 ft. (4.5 m)	587301	
21	Battery Cable, 20 ft. (6.0 m)	587302	
*	"Y" Harness (Optional accessory)	587230	Use to power digital displays & accessories to be powered when the key switch is ON.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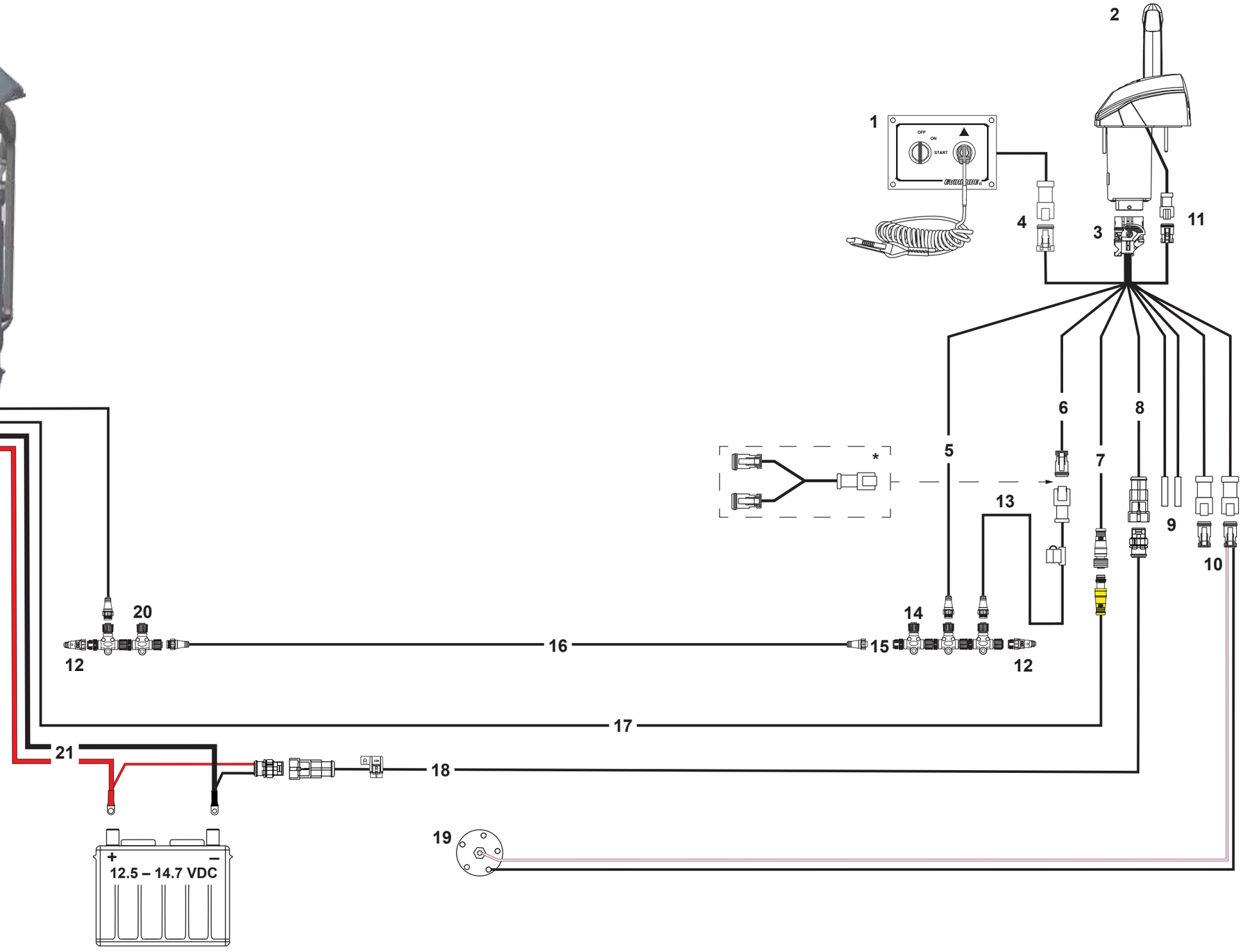
1
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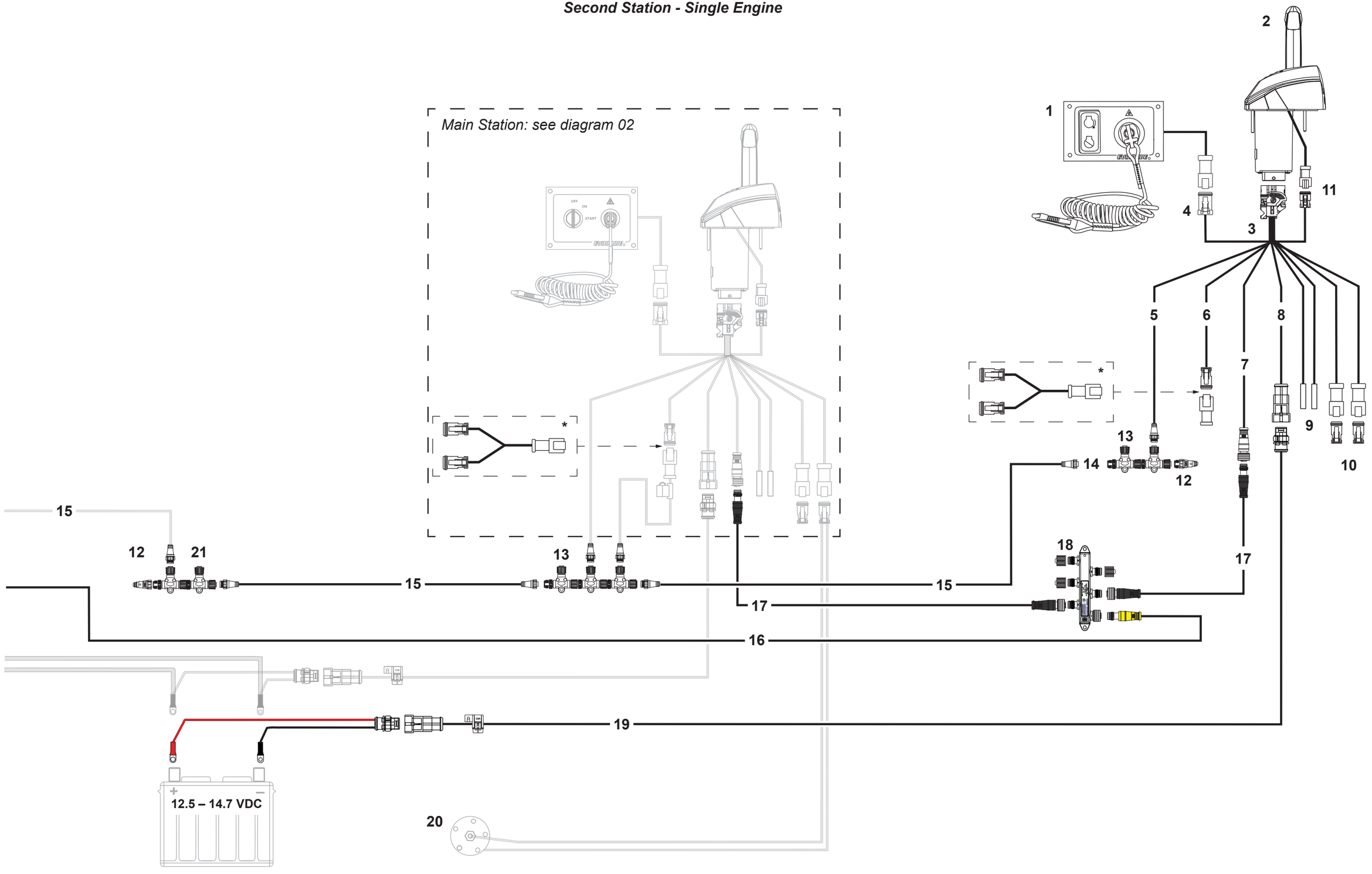
+
12.5 – 14.7 VDC
–

03 Single Binnacle Mount Remote Control / Second Station

Ref	Description	P/N	Notes
1	START – STOP Switch	766555	
2	Single Binacle Mount Remote Control	766563	
3	*Remote Control Harness	–	Included with Remote Control
4	START – STOP Switch Connection	–	
5	Remote Control to NMEA 2000 Network Connection	–	
6	Accessory Power Out (12 VDC)	–	
7	Remote Control Network Connection	–	
8	Network Power In (12 VDC)	–	
9	Oil Level 1 & 2 (not used on second station)	–	
10	Fuel Level 1 & 2 (not used on second station)	–	
11	Trim Switch Connection	–	
12	Terminator Kit	764155	
13	Connection to NMEA 2000 Digital Display	–	
14	Connection to NMEA 2000 Network	–	
15	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
16	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
17	Backbone Buss Cable Extensions	–	
	1 ft. (0.3 m)	587176	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
18	6–Port Hub	587172	See IMPORTANT note below
19	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
19	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
20	Fuel Tank Sender	–	
21	Connection to NMEA 2000 Accessories	–	GPS, Triducer, etc.
*	"Y" Harness (Optional accessory)	587230	Use to power digital displays & accessories to be powered when the key switch is ON.

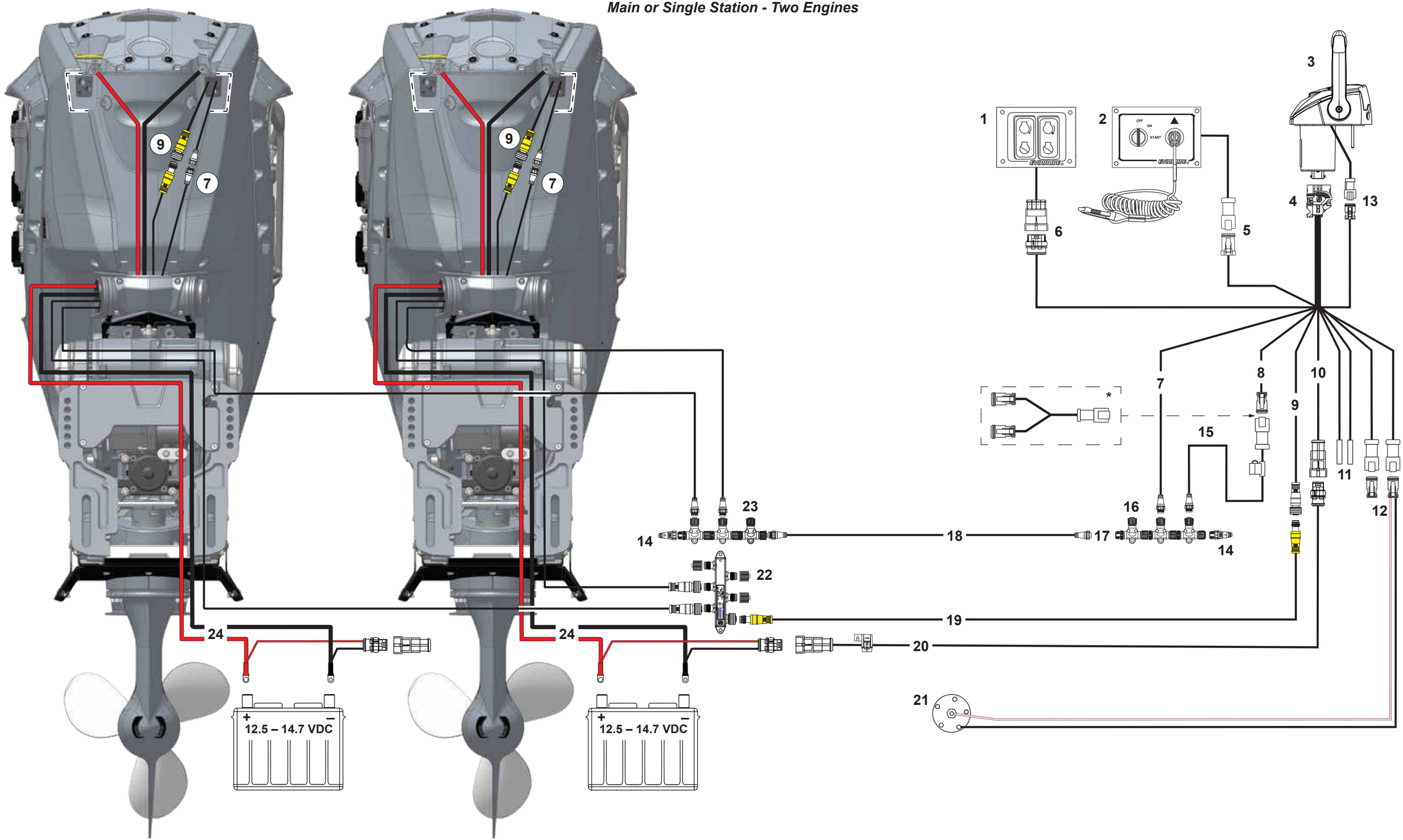
03_Digital Remote Controls – Single Binnacle Remote Control
Second Station - Single Engine



04 Dual Binnacle Mount Remote Control

Ref	Description	P/N	Notes
1	START – STOP Switch	5010021	
2	Key Switch/ STOP Switch	5010020	
3	Dual Binacle Mount Remote Control	766564	
4	*Remote Control Harness	–	Included with Remote Control
5	Key Switch Switch Connection	–	
6	START – STOP Switch Connection	–	
7	Remote Control to NMEA 2000 Network Connection	–	
8	Accessory Power Out (12 VDC)	–	
9	Remote Control Network Connection	–	
10	Network Power In (12 VDC)	–	
11	Oil Level 1 & 2	–	
12	Fuel Level 1 & 2	–	
13	Trim Switch Connection	–	
14	Terminator Kit	764155	
15	Power Node and Tee Kit	767433	3 Amp fuse
16	Connection to NMEA 2000 Digital Display	–	
17	Connection to NMEA 2000 Network	–	
18	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
19	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
NS	Backbone Buss Cable Extensions	–	
	1 ft. (0.3 m)	587176	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
20	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
20	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
21	Fuel Tank Sender	–	
22	6–Port Hub	587172	
23	Connection to NMEA 2000 Accessories	–	GPS, Triducer, etc.
24	Battery Cable, 10 ft. (3.0 m)	587205	
24	Battery Cable, 15 ft. (4.5 m)	587301	
24	Battery Cable, 20 ft. (6.0 m)	587302	
*	"Y" Harness (Optional accessory)	587230	Use to power digital displays & accessories to be powered when the key switch is ON.

04_Digital Remote Controls – Dual Binnacle Remote Control
Main or Single Station - Two Engines

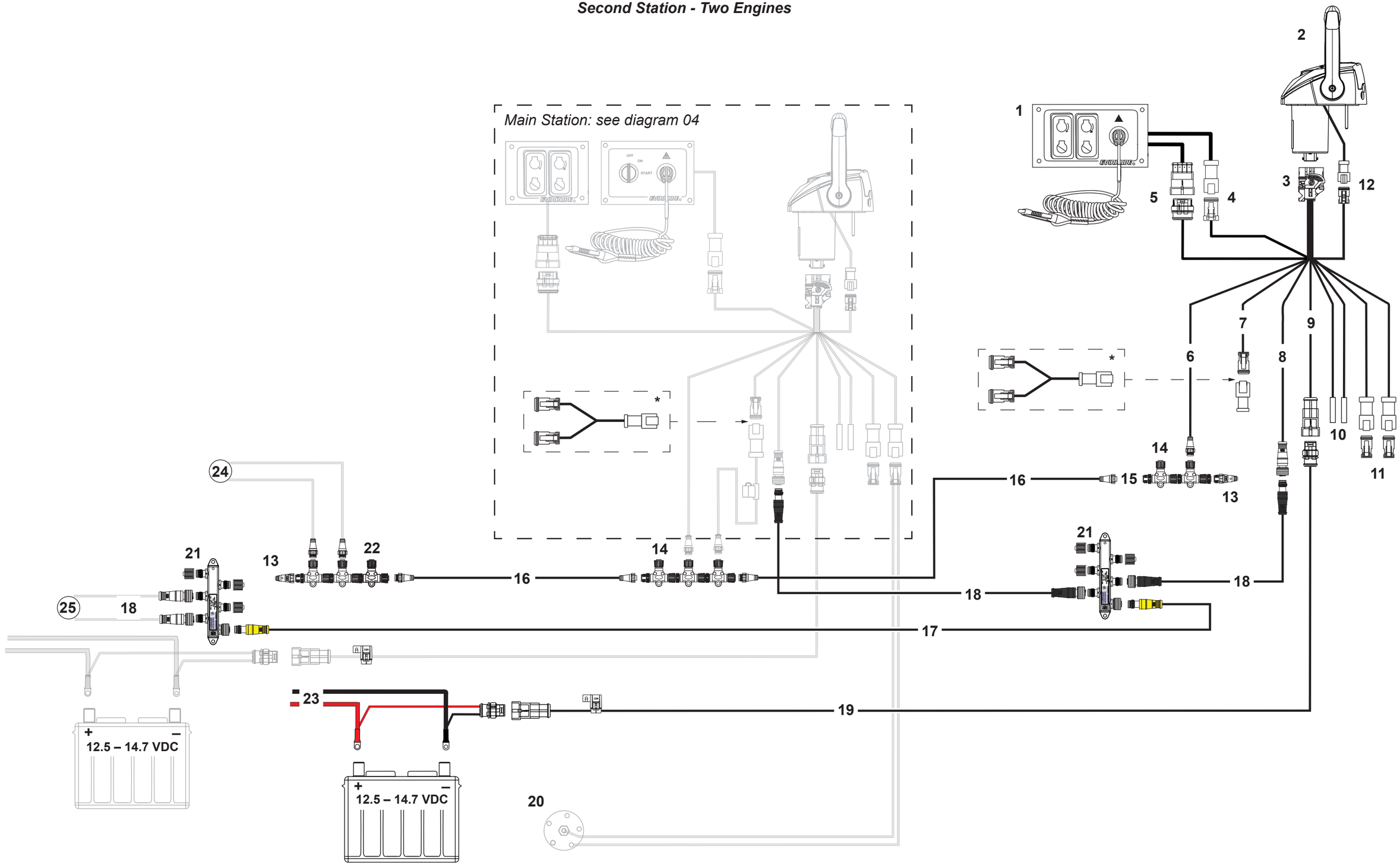


05 Dual Binnacle Mount Remote Control / Second Station

Ref	Description	P/N	Notes
1	START – STOP Switch, 2 Engine	766558	
2	Dual Binacle Mount Remote Control	766564	
3	*Remote Control Harness	–	Included with Remote Control
4	Key Switch Switch Connection	–	
5	START – STOP Switch Connection	–	
6	Remote Control to NMEA 2000 Network Connection	–	
7	Accessory Power Out (12 VDC)	–	
8	Remote Control Network Connection	–	
9	Network Power In (12 VDC)	–	
10	Oil Level 1 & 2	–	
11	Fuel Level 1 & 2	–	
12	Trim Switch Connection	–	
13	Terminator Kit	764155	
14	Connection to NMEA 2000 Digital Display	–	
15	Connection to NMEA 2000 Network	–	
16	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
17	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
18	Backbone Buss Cable Extensions	–	
	1 ft. (0.3 m)	587176	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
19	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
19	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
20	Fuel Tank Sender	–	
21	6–Port Hub	587172	See IMPORTANT note below
22	Connection to NMEA 2000 Accessories	–	GPS, Triducer, etc.
23	Battery Cable, 10 ft. (3.0 m)	587205	
23	Battery Cable, 15 ft. (4.5 m)	587301	
23	Battery Cable, 20 ft. (6.0 m)	587302	
24	NMEA 2000 Network to Engines	–	
25	Remote Control Network to Engines	–	
*	"Y" Harness (Optional accessory)	587230	Use to power digital displays & accessories to be powered when the key switch is ON.

IMPORTANT: Two station installations REQUIRE two 6-port hubs. The backbone buss cable MUST be connected as shown.

05_Digital Remote Controls – Dual Binnacle Remote Control
Second Station - Two Engines

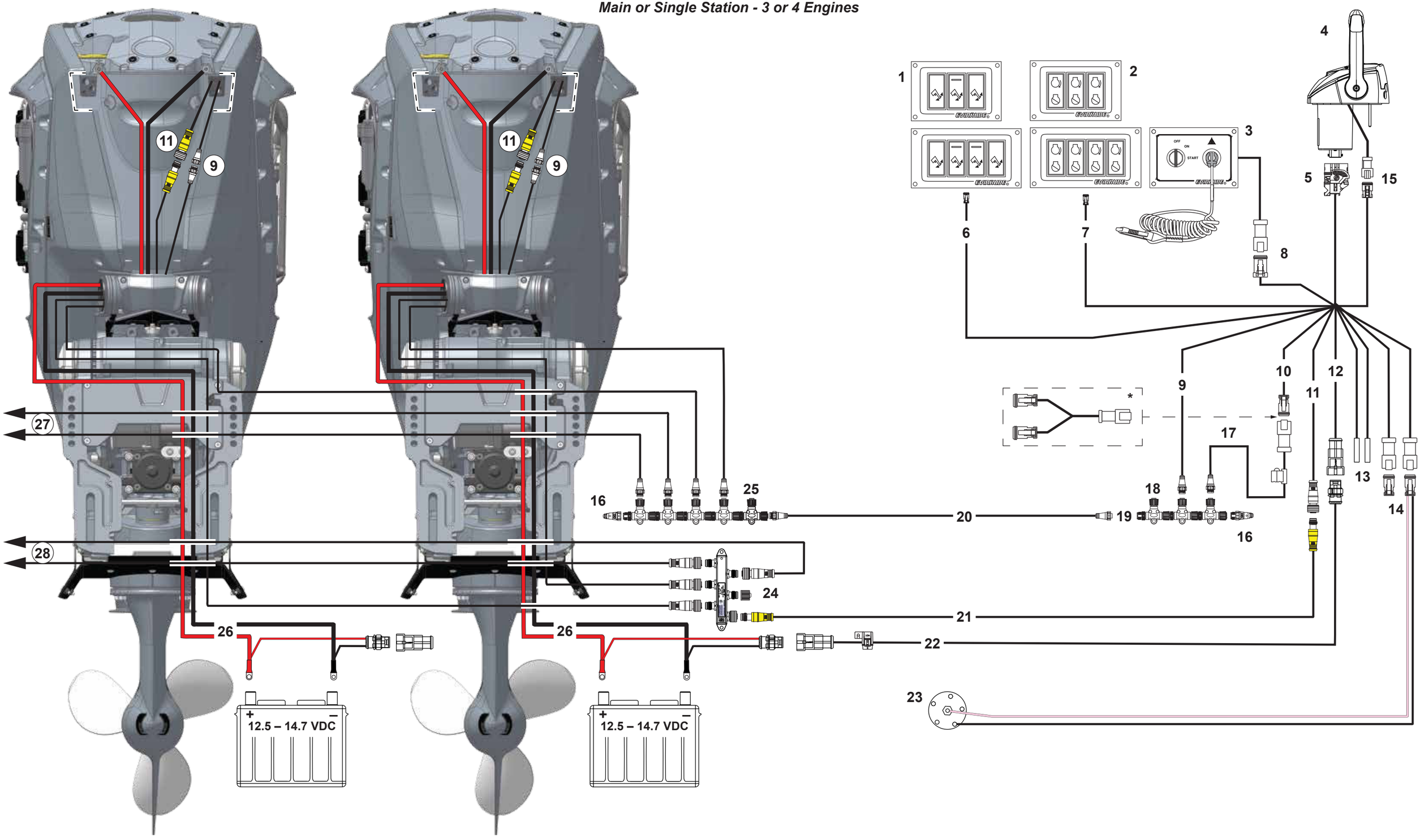


Rev D

06 Dual Binnacle Mount Remote Control 3 & 4 Outboard

Ref	Description	P/N	Notes
1	Trim Switch Module, 3 Engine	766583	
1	Trim Switch Module, 4 Engine	766584	
2	START – STOP Switch Panel, 3 Engine	766559	
2	START – STOP Switch Panel, 4 Engine	766561	
3	Key Switch Kit	768747	
4	Dual Binacle Mount Remote Control	766564	
5	*Remote Control Harness	–	Included with Remote Control
6	Trim Module Conneciton	–	
7	START – STOP Switch Connection	–	
8	Key Switch Switch Connection	–	
9	Remote Control to NMEA 2000 Network Connection	–	
10	Accessory Power Out (12 VDC)	–	
11	Remote Control Network Connection	–	
12	Network Power In (12 VDC)	–	
13	Oil Level 1 & 2	–	
14	Fuel Level 1 & 2	–	
15	Trim Switch Connection	–	
16	Terminator Kit	764155	
17	Power Node and Tee Kit	767433	3 Amp fuse
18	Connection to NMEA 2000 Digital Display	–	
19	Connection to NMEA 2000 Network	–	
20	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
21	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
NS	Backbone Buss Cable Extensions	–	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
22	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
22	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
23	Fuel Tank Sender	–	
24	6–Port Hub	587172	
25	Connection to NMEA 2000 Accessories	–	GPS, Triducer, etc.
26	Battery Cable, 10 ft. (3.0 m)	587205	
26	Battery Cable, 15 ft. (4.5 m)	587301	
26	Battery Cable, 20 ft. (6.0 m)	587302	
27	NMEA 2000 Network to Engines 3 & 4	–	
28	Remote Control Network to Engines 3 & 4	–	
*	"Y" Harness (Optional accessory)	587230	Use to power digital displays & accessories to be powered when the key switch is ON.

06_Digital Remote Controls – Dual Binnacle Remote Control
Main or Single Station - 3 or 4 Engines

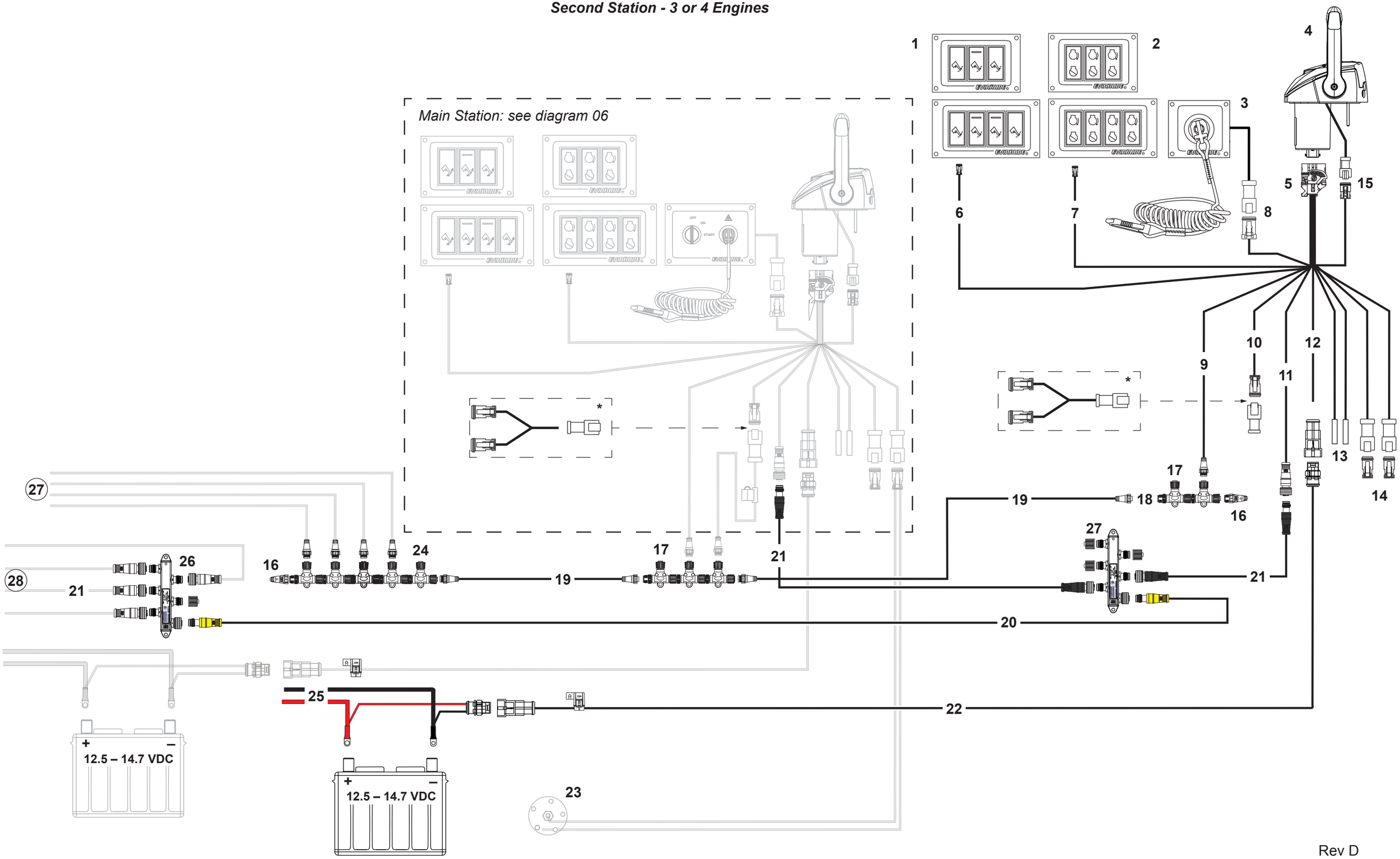


07 Dual Binnacle Mount Remote Control 3 & 4 Outboard / 2nd Station

Ref	Description	P/N	Notes
1	Trim Switch Module, 3 Engine	766583	
1	Trim Switch Module, 4 Engine	766584	
2	START – STOP Switch Panel, 3 Engine	766559	
2	START – STOP Switch Panel, 4 Engine	766561	
3	STOP Switch Kit	766560	
4	Dual Binacle Mount Remote Control	766564	
5	*Remote Control Harness	–	Included with Remote Control
6	Trim Module Conneciton	–	
7	START – STOP Switch Connection	–	
8	Key Switch Switch Connection	–	
9	Remote Control to NMEA 2000 Network Connection	–	
10	Accessory Power Out (12 VDC)	–	
11	Remote Control Network Connection	–	
12	Network Power In (12 VDC)	–	
13	Oil Level 1 & 2	–	
14	Fuel Level 1 & 2	–	
15	Trim Switch Connection	–	
16	Terminator Kit	764155	
17	Connection to NMEA 2000 Digital Display	–	
18	Connection to NMEA 2000 Network	–	
19	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
20	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
21	Backbone Buss Cable Extensions	–	
	1 ft. (0.3 m)	587176	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
22	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
22	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
23	Fuel Tank Sender	–	
24	Connection to NMEA 2000 Accessories	–	GPS, Triducer, etc.
25	Battery Cable, 10 ft. (3.0 m)	587205	
25	Battery Cable, 15 ft. (4.5 m)	587301	
25	Battery Cable, 20 ft. (6.0 m)	587302	
26	6–Port Hub	587172	See IMPORTANT note below
27	NMEA 2000 Network Buss Cables to Engines	–	
28	Remote Control Network Buss Cables to Engines	–	
*	"Y" Harness (Optional accessory)	587230	Use to power digital displays & accessories to be powered when the key switch is ON.

IMPORTANT: This installation REQUIRES two 6-port hubs. The backbone buss cable MUST be connected as shown.

07_Digital Remote Controls – Dual Binnacle Remote Control
Second Station - 3 or 4 Engines



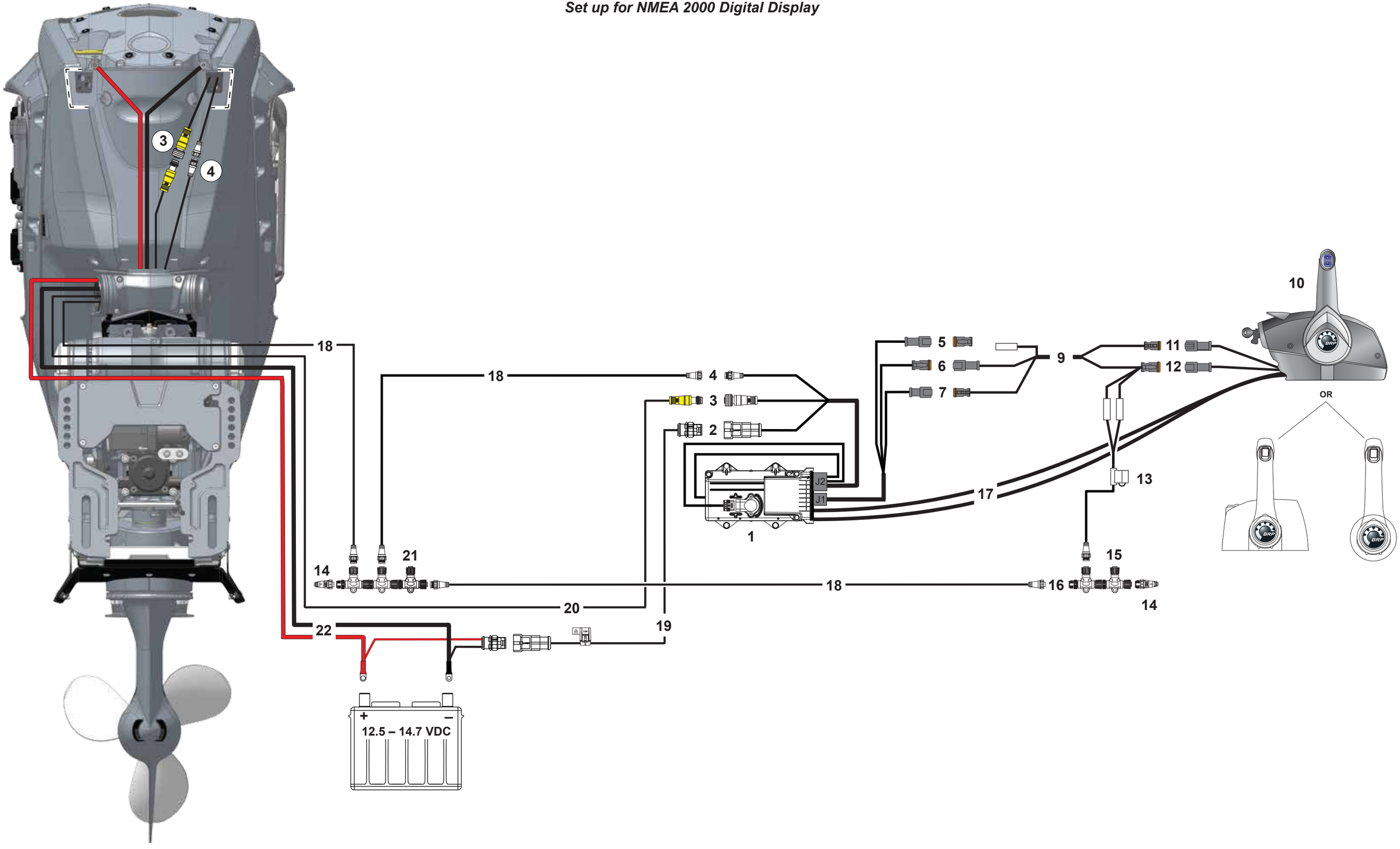
Rev D

Mechanical Remote Controls

08 Mechanical Remote Controls with UCM, Using a *NMEA 2000* Digital Display

Ref	Description	P/N	Notes
1	Universal Control Module (UCM)	5008963	Converts Mechanical to Digital Shift & Throttle
2	Network Power In (12 VDC)	–	
3	Remote Control Network Connection (to engine)	–	
4	NMEA 2000 Network Connection	–	
5	*SystemCheck* Connection (Not Used)	–	
6	Key Switch Switch Connection	–	
7	Trim Switch Connection	–	
9	Ignition, Trim & Tilt Harness	–	
	15 ft. (4.5 m)	763543	
	20 ft. (6.0 m)	763544	
	25 ft. (7.6 m)	763545	
	28 ft. (8.5 m)	763546	
10	Mechanical Remote Control	–	Refer to Parts & Accessories Catalog
11	Trim Switch Connection	–	
12	Key Switch Switch Connection	–	
13	NMEA 2000 Network Power Supply Kit	764157	
14	Terminator Kit	764155	
15	Connection to NMEA 2000 Digital Display	–	
16	Connection to NMEA 2000 Network	–	
17	Control Cables (Shift & Throttle)	–	
18	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
19	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
19	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
20	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
NS	Backbone Buss Cable Extensions	–	
	1 ft. (0.3 m)	587176	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
21	Connection to NMEA 2000 Accessories	–	GPS, Triducer, etc.
22	Battery Cable, 10 ft. (3.0 m)	587205	
22	Battery Cable, 15 ft. (4.5 m)	587301	
22	Battery Cable, 20 ft. (6.0 m)	587302	

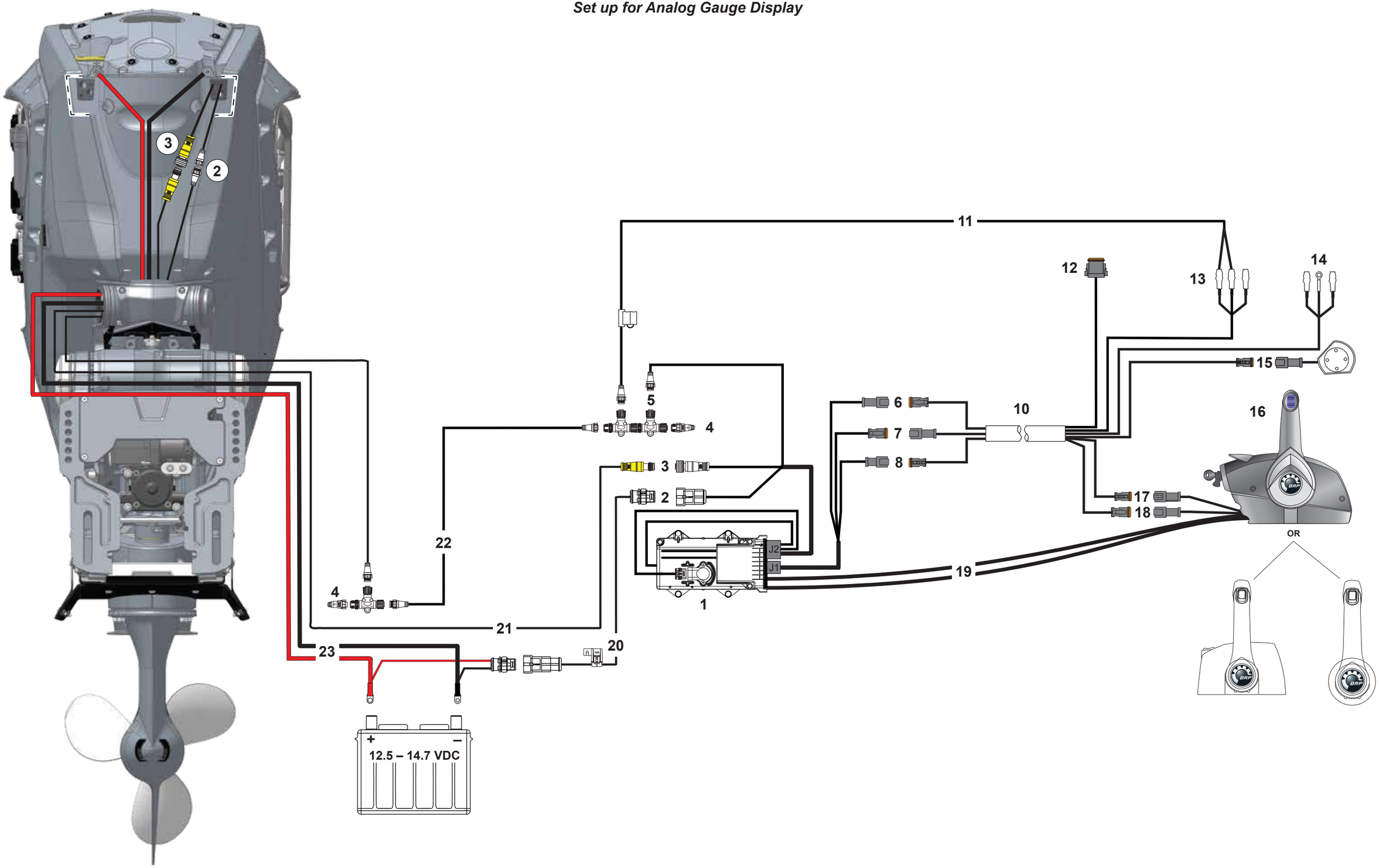
08_Mechanical Remote Controls – MCM Converter
Set up for NMEA 2000 Digital Display



09 Mechanical Remote Controls with UCM, Using an Analog Gauge Display

Ref	Description	P/N	Notes
1	Universal Control Module (UCM)	5008963	Converts Mechanical to Digital Shift & Throttle
2	Network Power In (12 VDC)	–	
3	Remote Control Network Connection (to engine)	–	
4	Terminator Kit	764155	
5	NMEA 2000 Network Connection	–	
6	*SystemCheck* Connection (Not Used)	–	
7	Key Switch Switch Connection	–	
8	Trim Switch Connection	–	
10	MWS Harness	–	
	12 ft. (3.6 m)	176339	
	15 ft. (4.5 m)	176340	
	20 ft. (6.0 m)	176341	
	28 ft. (8.5 m)	176342	
11	NMEA 2000 Network Power Supply Kit	764157	
12	SystemCheck Tachometer Connection	–	use purple and black to supply 12VDC to NMEA 2000 network
13	Non–SystemCheck Tachometer Connection	–	
14	Trim Gauge Connection	–	
15	Warning Horn Connection	–	
16	Mechanical Remote Control	–	Refer to Parts & Accessories Catalog
17	Trim Switch Connection	–	
18	Key Switch Switch Connection	–	
19	Control Cables (Shift & Throttle)	–	
20	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
20	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
21	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
NS	Backbone Buss Cable Extensions	–	
	1 ft. (0.3 m)	587176	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
22	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
23	Battery Cable, 10 ft. (3.0 m)	587205	
23	Battery Cable, 15 ft. (4.5 m)	587301	
23	Battery Cable, 20 ft. (6.0 m)	587302	

09_Mechanical Remote Controls – MCM Converter
Set up for Analog Gauge Display

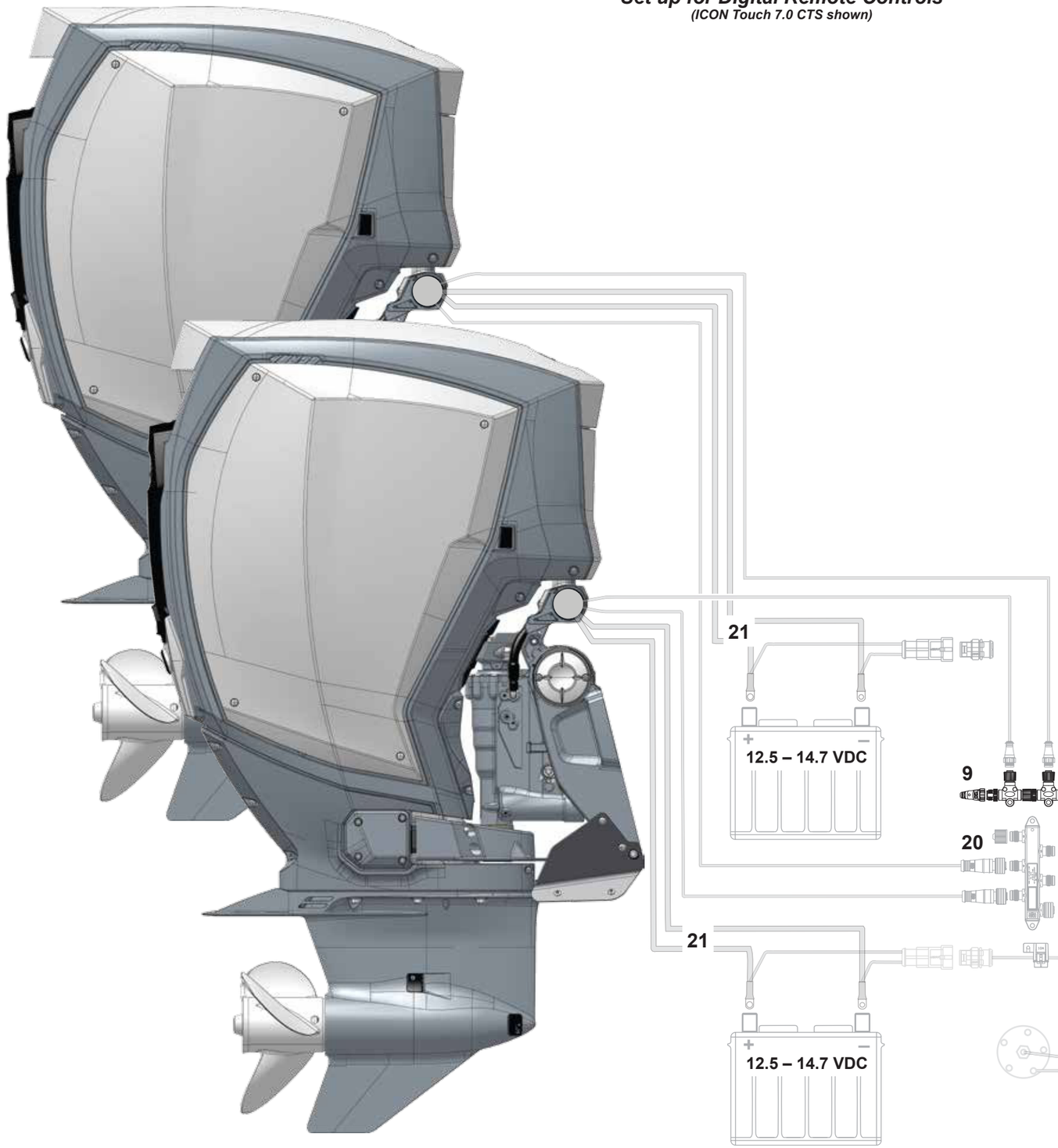


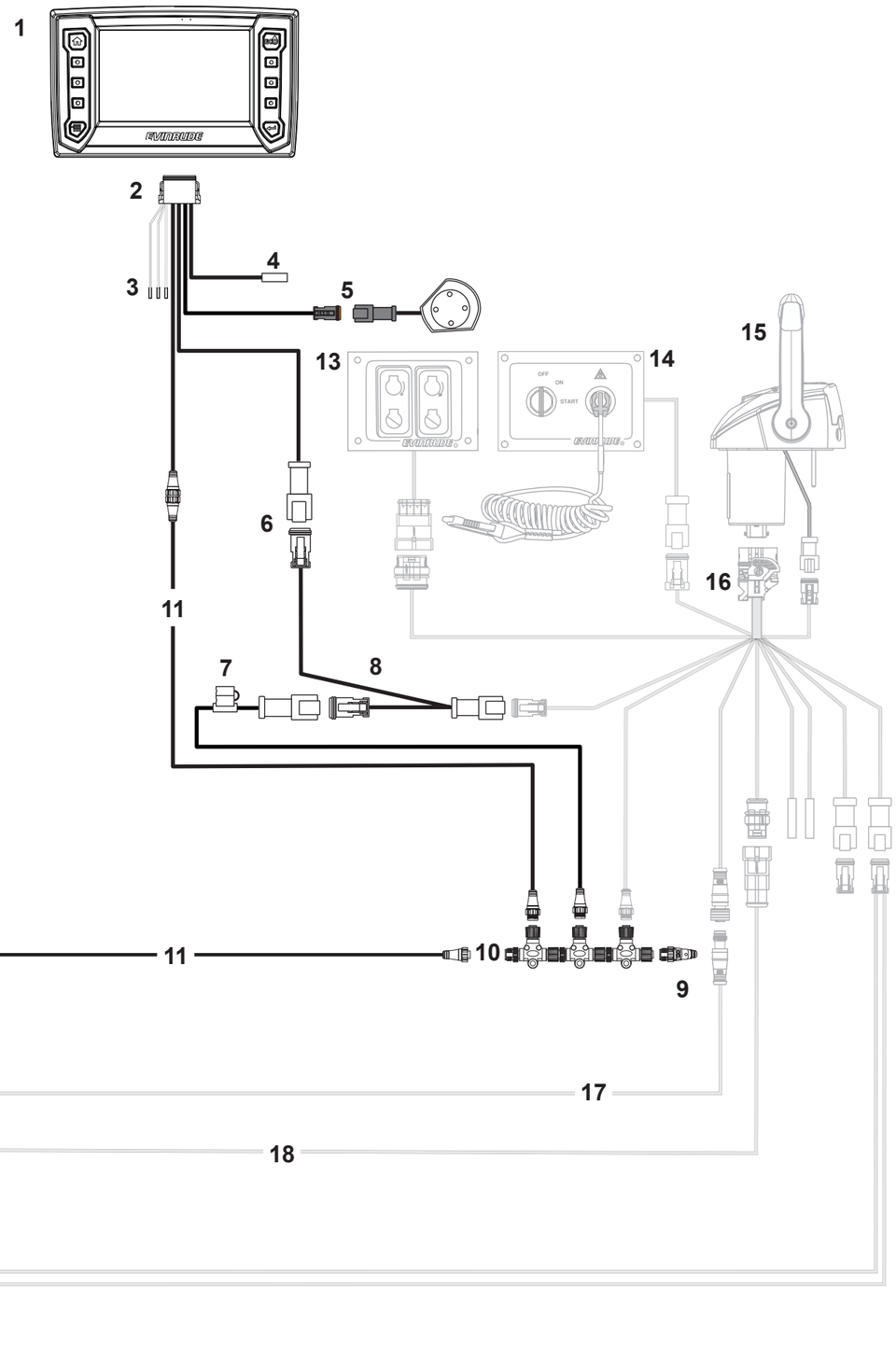
Digital Displays

10 *Evinrude ICON* Touch Digital Displays

Ref	Description	P/N	Notes
1	Evinrude ICON Touch 7.0 CTS	766284	7.0 inch display
2	*Harness	767300	Included with display
1	Evinrude ICON Touch 4.3 CTS	766285	4.3 inch display
2	*Harness	767551	Included with display
1	Evinrude ICON Touch 3.5 C	767750	3.5 inch display
2	*Harness	767749	Included with display
3	Fluid Level Connections	–	
4	Nav Light Connection	–	
5	Warning Horn Connection	–	
6	Power Connection 12 VDC	–	
7	Power Node and Tee Kit	767433	3 Amp fuse
8	* "Y" Harness	587230	(1) "Y" harness included with P/N 767433
9	Terminator Kit	764155	
10	NMEA 2000 Network Connection	–	
11	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
12	Connection to NMEA 2000 Accessories	–	GPS, Triducer, etc.
13	START – STOP Switch	5010021	
14	Key Switch/ STOP Switch	5010020	
15	Dual Binacle Mount Remote Control	766564	
16	*Remote Control Harness	–	Included with Remote Control
17	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
NS	Backbone Buss Cable Extensions	–	
	1 ft. (0.3 m)	587176	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
18	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
18	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
19	Fuel Tank Sender	–	
20	6–Port Hub	587172	
21	Battery Cable, 10 ft. (3.0 m)	587205	
21	Battery Cable, 15 ft. (4.5 m)	587301	
21	Battery Cable, 20 ft. (6.0 m)	587302	

10_Digital Displays and Gauges – ICON Touch 7.0 CTS, 4.3 CTS & 3.5 C
Set up for Digital Remote Controls
(ICON Touch 7.0 CTS shown)

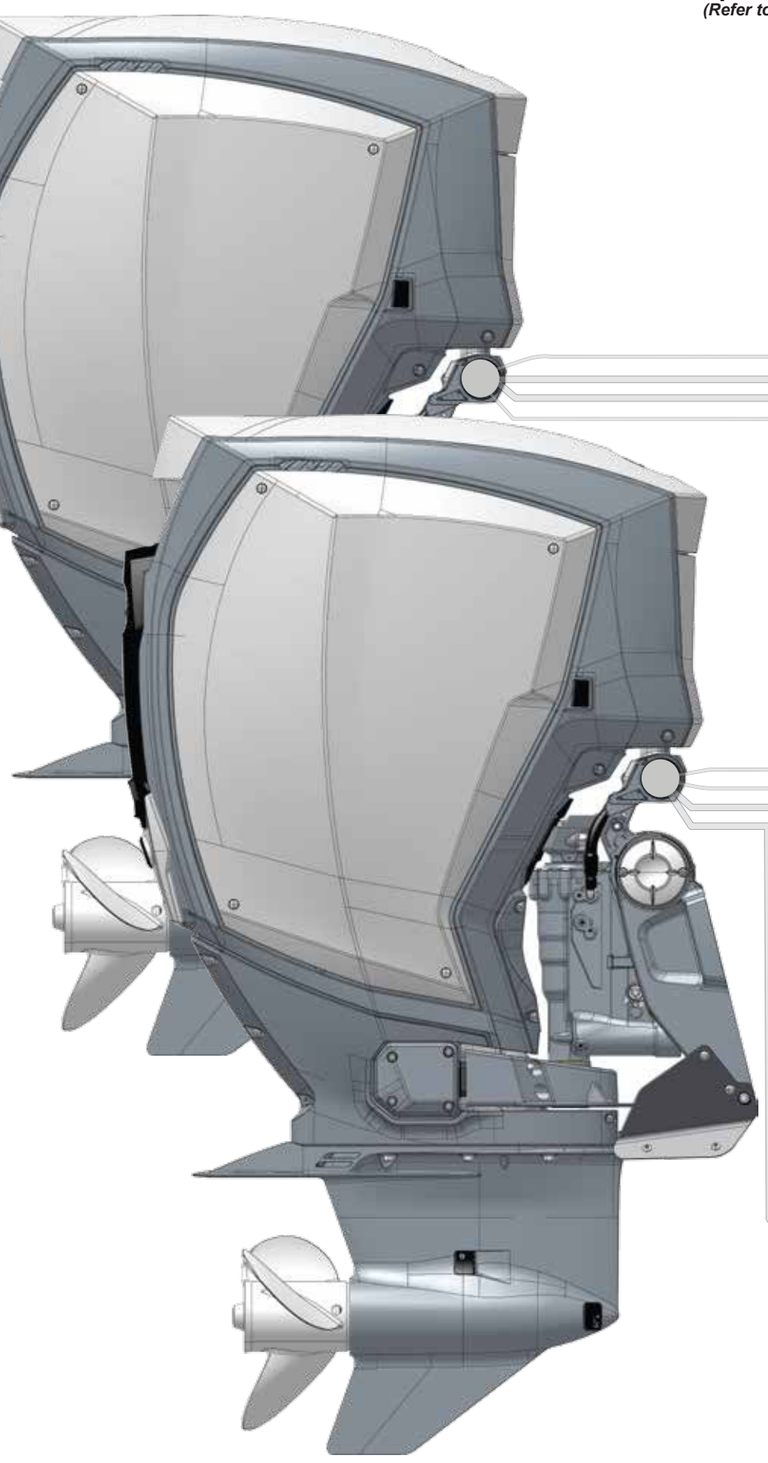


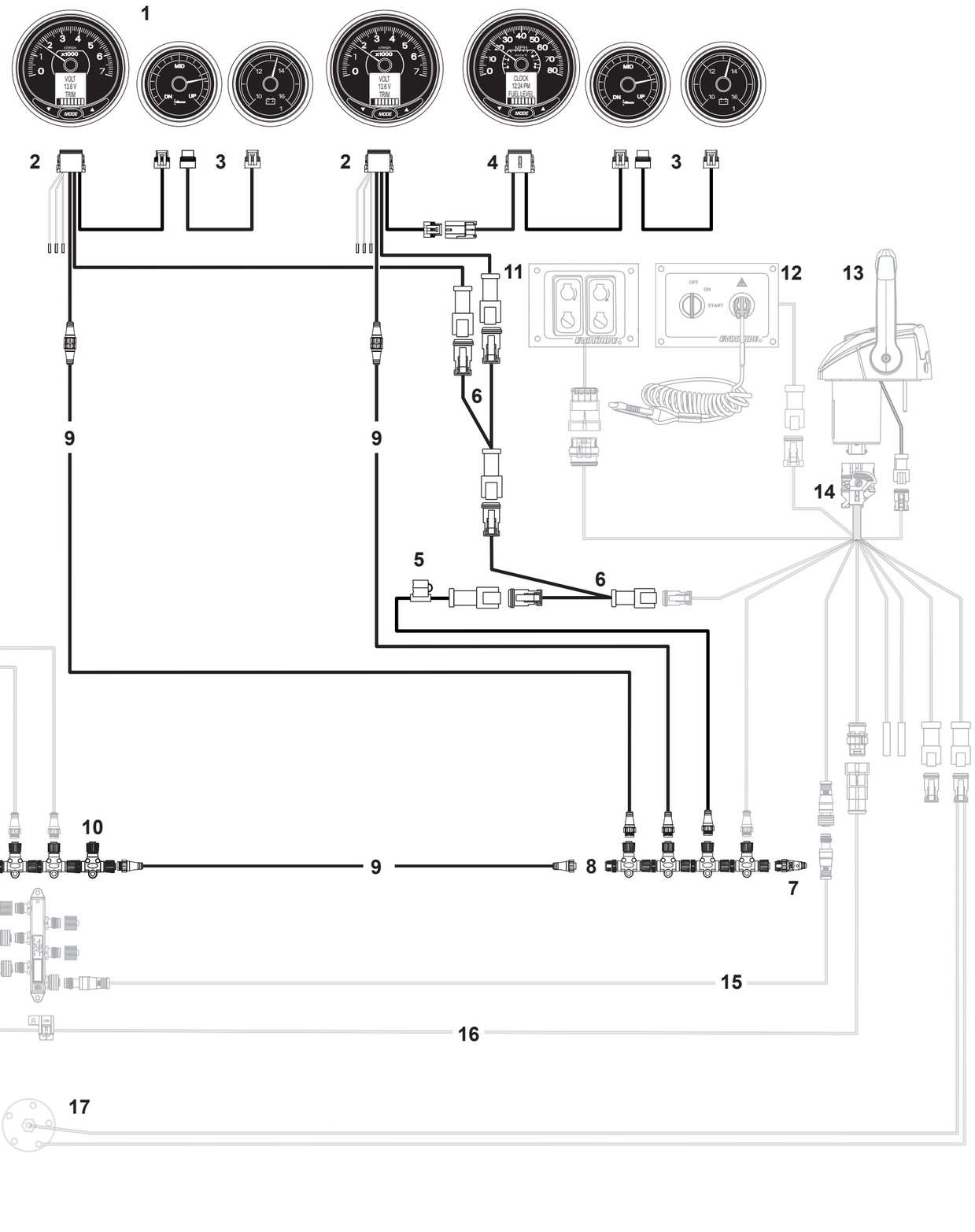


11 *ICON* Digital Display

Ref	Description	P/N	Notes
1	ICON Digital Displays and Gauges	–	Refer to Parts & Accessories Catalog
2	Tachometer Harness	765499	
3	Harness, 2 inch Gauge	–	
	12 in. (30 mm)	765512	
	24 in. (61 mm)	765514	
	30 in. (76 mm)	765515	
4	Speedometer Harness	765509	
5	Power Node and Tee Kit	767433	3 Amp fuse
6	* "Y" Harness	587230	(1) "Y" harness included with P/N 767433
7	Terminator Kit	764155	
8	NMEA 2000 Network Connection	–	
9	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
10	Connection to NMEA 2000 Accessories	–	GPS, Triducer, etc.
11	START – STOP Switch	5010021	
12	Key Switch/ STOP Switch	5010020	
13	Dual Binacle Mount Remote Control	766564	
14	*Remote Control Harness	–	Included with Remote Control
15	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
NS	Backbone Buss Cable Extensions	–	
	1 ft. (0.3 m)	587176	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
16	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
16	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
17	Fuel Tank Sender	–	
18	6–Port Hub	587172	
19	Battery Cable, 10 ft. (3.0 m)	587205	
19	Battery Cable, 15 ft. (4.5 m)	587301	
19	Battery Cable, 20 ft. (6.0 m)	587302	

11_Digital Displays and Gauges – ICON Digital Display
Set up for Digital Remote Controls
(Refer to ICON Gauge Installation Guide)

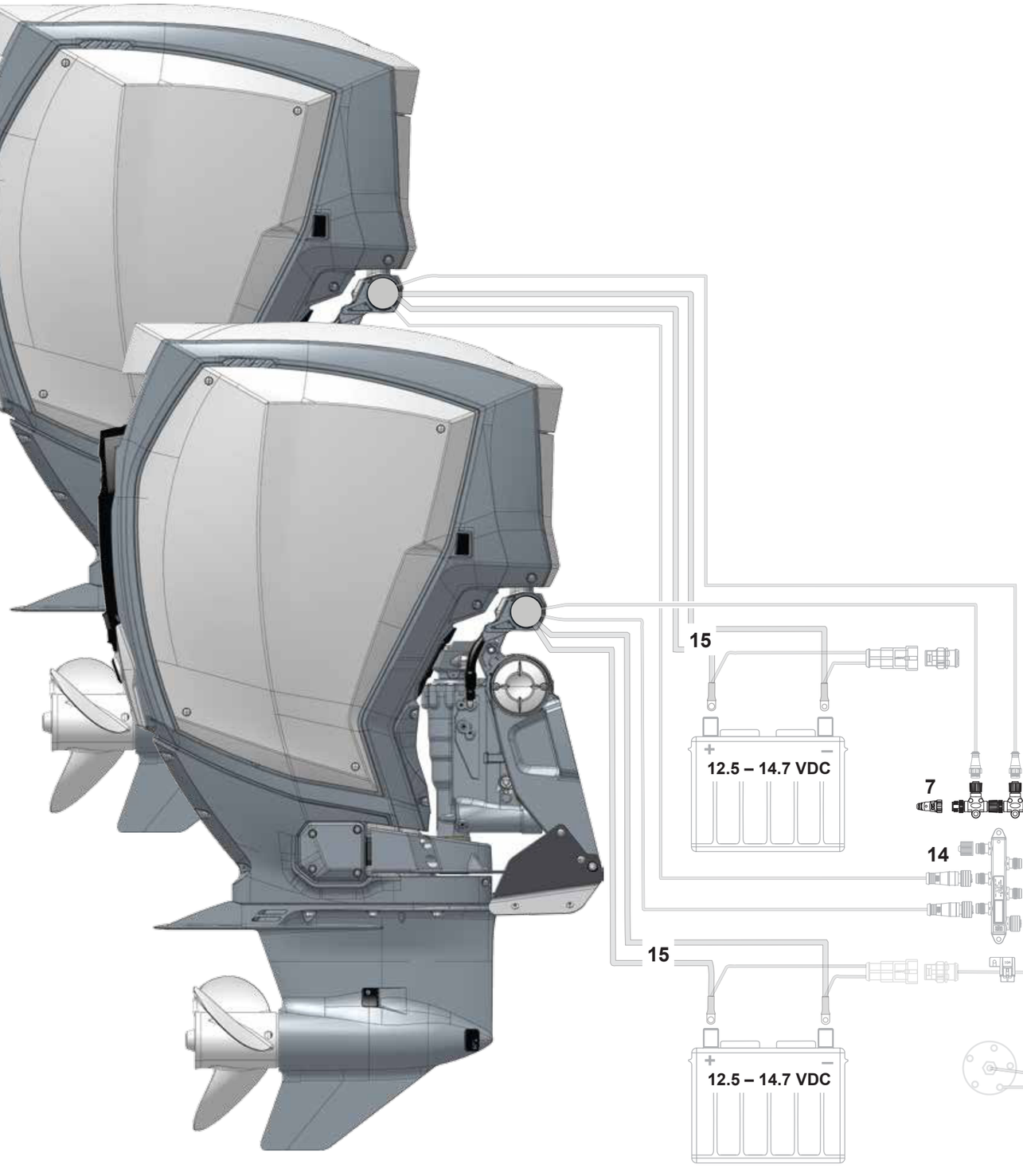


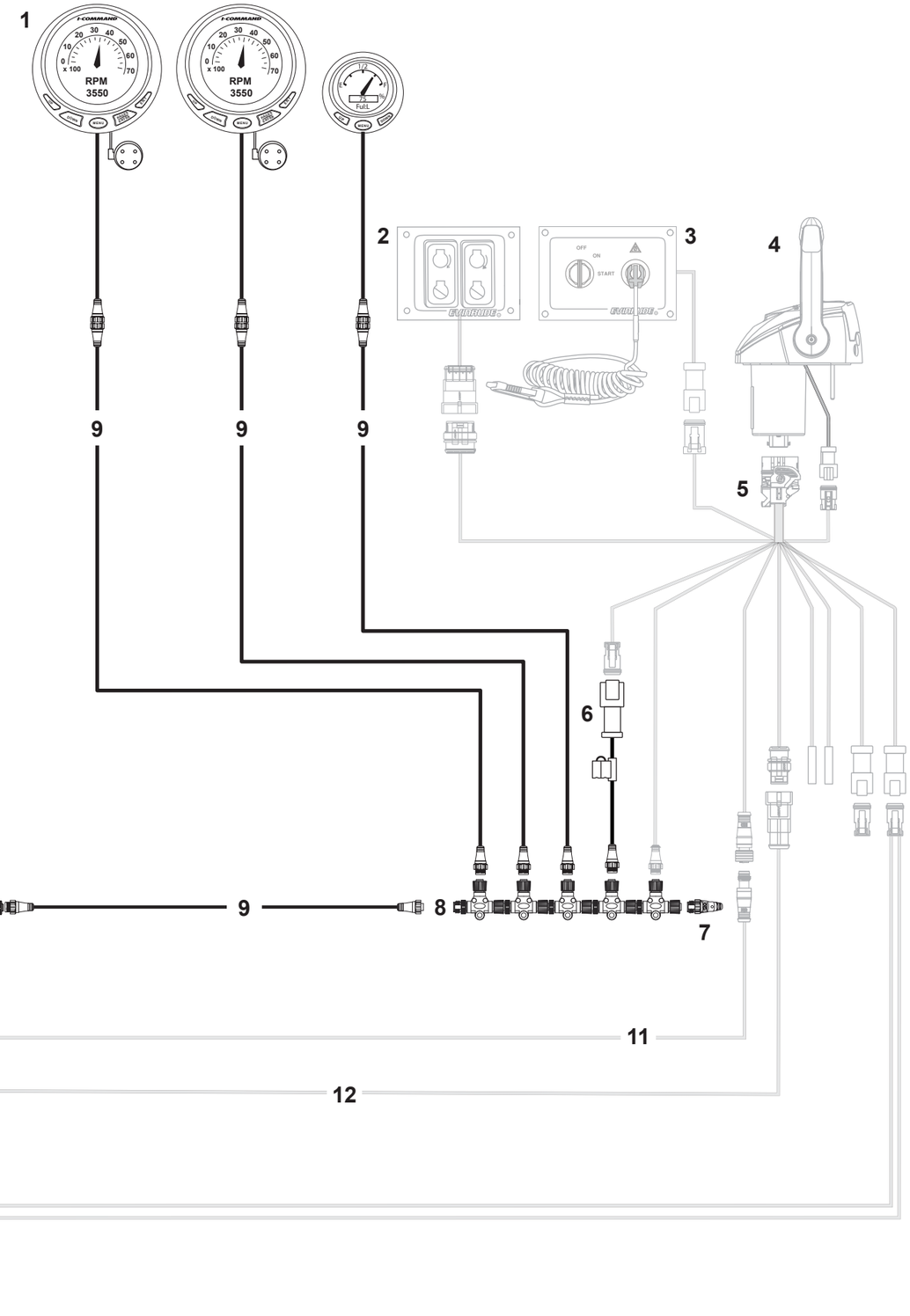


12 *I-Command* Digital Display

Ref	Description	P/N	Notes
1	I-Command Digital Displays and Gauges	–	Refer to Parts & Accessories Catalog
2	START – STOP Switch	5010021	
3	Key Switch/ STOP Switch	5010020	
4	Dual Binacle Mount Remote Control	766564	
5	*Remote Control Harness	–	Included with Remote Control
6	NMEA 2000 Network Power Supply Kit	764157	
7	Terminator Kit	764155	
8	NMEA 2000 Network Connection	–	
9	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
10	Connection to NMEA 2000 Accessories	–	GPS, Triducer, etc.
11	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
NS	Backbone Buss Cable Extensions	–	
	1 ft. (0.3 m)	587176	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
12	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
12	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
13	Fuel Tank Sender	–	
14	6–Port Hub	587172	
15	Battery Cable, 10 ft. (3.0 m)	587205	
15	Battery Cable, 15 ft. (4.5 m)	587301	
15	Battery Cable, 20 ft. (6.0 m)	587302	

12_Digital Displays & Gauges – I-Command Digital Display
Set up for Digital Remote Controls

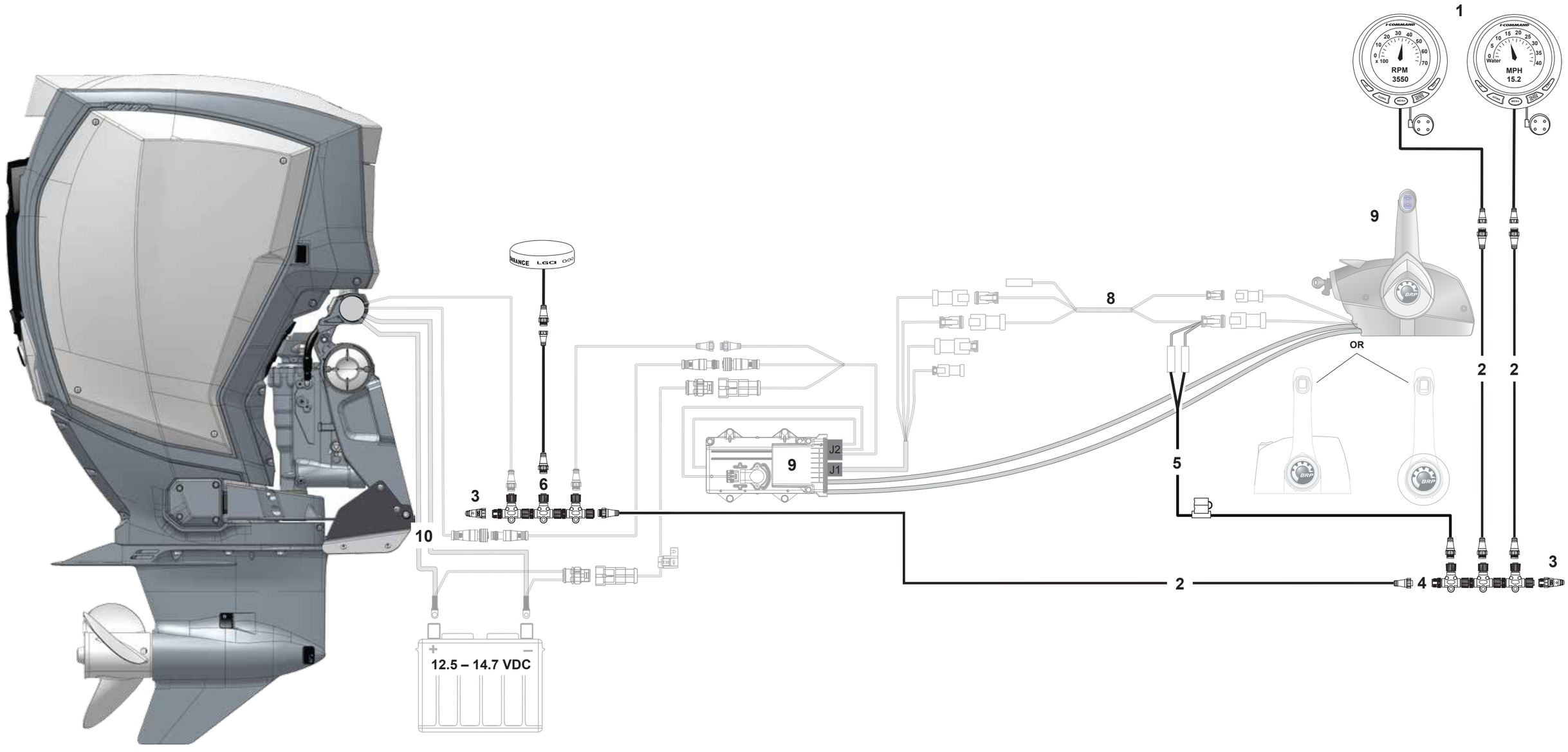




13 *I-Command* Digital Display, Mechanical Remote Controls, With UCM

Ref	Description	P/N	Notes
1	I-Command Digital Displays and Gauges	–	Refer to Parts & Accessories Catalog
2	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
3	Terminator Kit	764155	
4	NMEA 2000 Network Connection	–	
5	NMEA 2000 Network Power Supply Kit	764157	
6	Connection to NMEA 2000 Accessories	–	GPS, Triducer, etc.
7	Mechanical Remote Control	–	
8	MWS Harness	–	
	12 ft. (3.6 m)	176339	
	15 ft. (4.5 m)	176340	
	20 ft. (6.0 m)	176341	
	28 ft. (8.5 m)	176342	
9	Universal Control Module (UCM)	5008963	Converts Mechanical to Digital Shift & Throttle
10	Battery Cable, 10 ft. (3.0 m)	587205	
10	Battery Cable, 15 ft. (4.5 m)	587301	
10	Battery Cable, 20 ft. (6.0 m)	587302	

13_Digital Displays & Gauges – I-Command Digital Display
Set up for Mechanical Remote Controls with MCM Converter

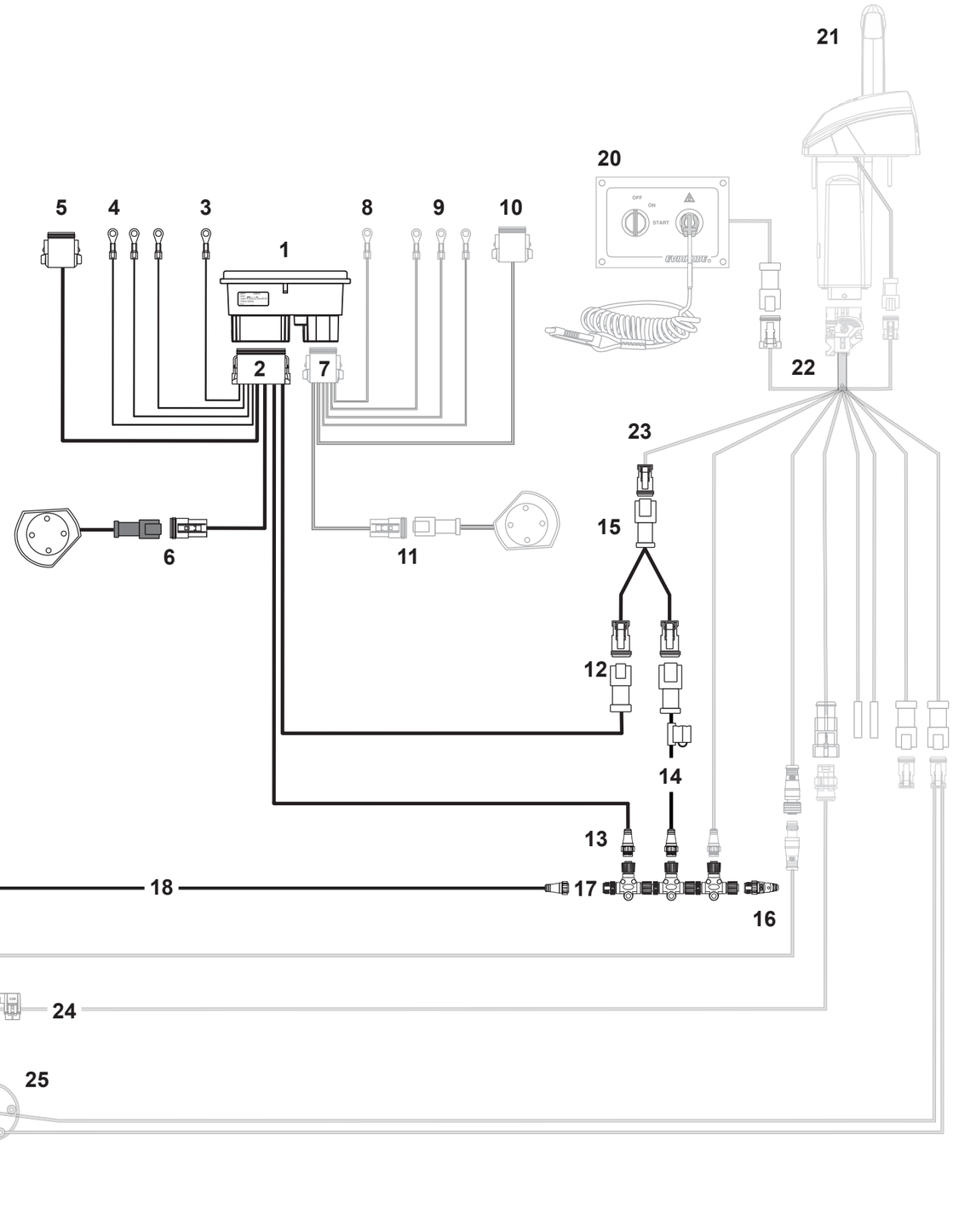


Analog Displays

14 Analog Display, Digital Remote Controls With Digital to Analog Converter

Ref	Description	P/N	Notes
1	Digital to Analog Converter	766287	
2	*Harness (Single or Port Engine/Tachometer)	587212	Included with Converter
3	Trim Send Connection	–	
4	Non-SystemCheck Connection	–	
5	SystemCheck Tachometer Connection	–	
6	Warning Horn Connection	–	
7	Harness (Dual Engine/Starboard Tachometer)	587213	Optional (use for starboard gauges in a dual engine installation)
8	Trim Send Connection	–	Optional
9	Non-SystemCheck Connection	–	Optional
10	SystemCheck Tachometer Connection	–	Optional
11	Warning Horn Connection	–	Optional
12	Converter Power Connection (12 VDC)	–	
13	NMEA 2000 Network Connection	–	
14	Power Node and Tee Kit	767433	3 Amp fuse
15	* "Y" Harness	587230	
16	Terminator Kit	764155	
17	NMEA 2000 Network Connection	–	
18	NMEA 2000 Buss Cables	–	
	2 ft. (0.6 m)	765132	
	6 ft. (1.8 m)	764161	
	15 ft. (4.5 m)	764162	
	25 ft. (7.6 m)	764163	
19	NMEA 2000 Network Connection (to engine)	764155	
20	Key Switch (OFF – ON – START)	768746	
21	Remote Control	–	Refer to Parts & Accessories Catalog
22	*Harness	–	Included with Remote Control
23	Accessory Power Out (12 VDC)	–	
24	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
24	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
25	Fuel Tank Sender	–	
26	Battery Cable, 10 ft. (3.0 m)	587205	
26	Battery Cable, 15 ft. (4.5 m)	587301	
26	Battery Cable, 20 ft. (6.0 m)	587302	

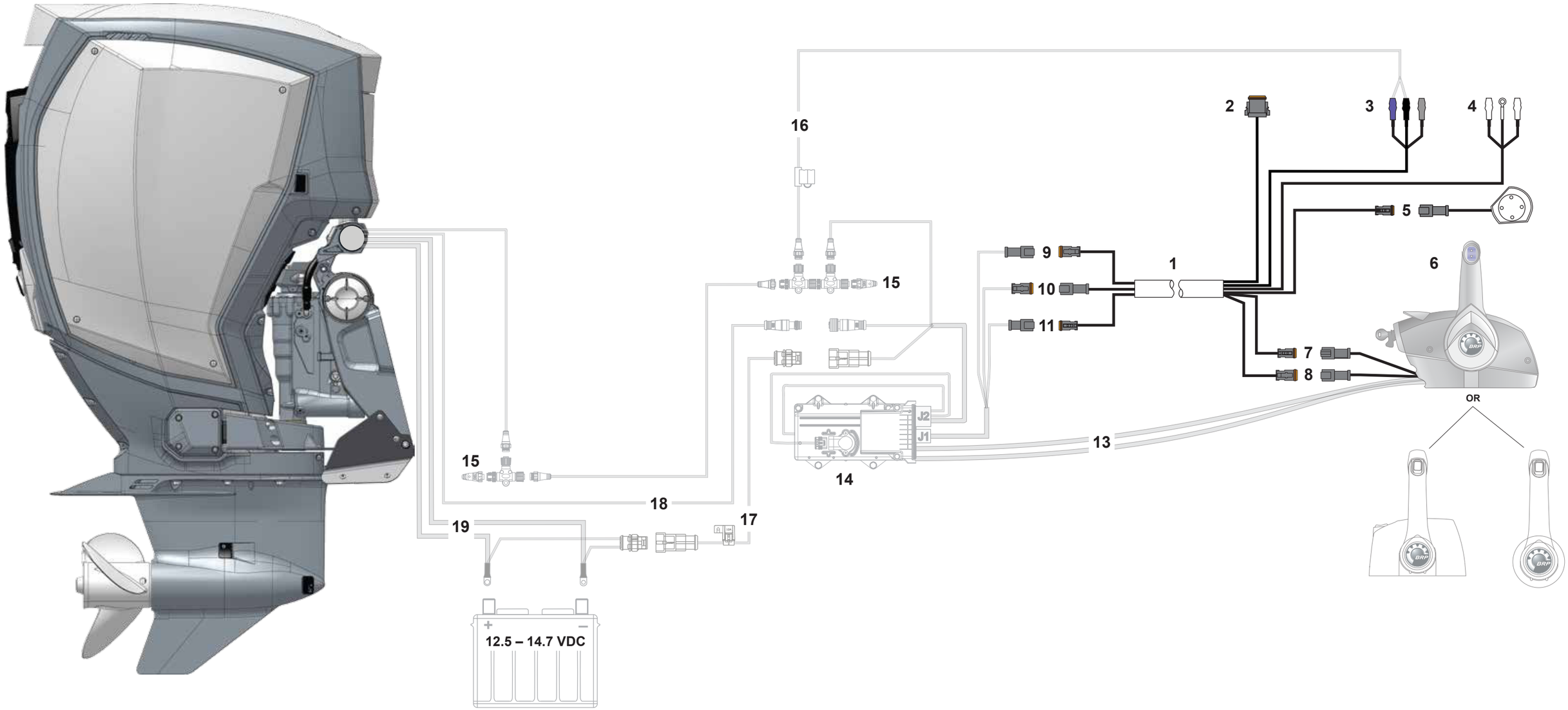
14_Analog Displays & Gauges – Analog Gauge Display
Set up for Digital Remote Controls with Digital to Analog Converter



15 Analog Display, Mechanical Remote Controls with UCM

Ref	Description	P/N	Notes
1	MWS Harness	–	
	12 ft. (3.6 m)	176339	
	15 ft. (4.5 m)	176340	
	20 ft. (6.0 m)	176341	
	28 ft. (8.5 m)	176342	
2	SystemCheck Tachometer Connection	–	
3	Non–SystemCheck Tachometer Connection	–	use purple and black to supply 12VDC to NMEA 2000 network
4	Trim Gauge Connection	–	
5	Warning Horn Connection	–	
6	Mechanical Remote Control	–	
7	Trim Switch Connection	–	
8	Key Switch Switch Connection	–	
9	*SystemCheck* Connection (Not Used)	–	
10	Key Switch Switch Connection	–	
11	Trim Switch Connection	–	
13	Control Cables (Shift & Throttle)	–	
14	Universal Control Module (UCM)	5008963	Converts Mechanical to Digital Shift & Throttle
15	Terminator Kit	764155	
16	NMEA 2000 Network Power Supply Kit	764157	
17	Network Power Cable, 15 ft. (4.5 m)	587184	10 Amp fuse
17	Network Power Cable, 25 ft. (7.6 m)	587183	10 Amp fuse
NS	Network Power Cable Extension, 5 ft. (1.5 m)	587185	
NS	Network Power Cable Extension, 10 ft. (3.0 m)	587186	
18	Backbone Buss Cables	–	
	15 ft. (4.5 m)	587173	
	20 ft. (6.0 m)	587174	
	25 ft. (7.6m)	587175	
NS	Backbone Buss Cable Extensions	–	
	1 ft. (0.3 m)	587176	
	2 ft. (0.6 m)	587177	
	4 ft. (1.5 m)	587178	
	10 ft. (3.0 m)	587179	
	15 ft. (4.5 m)	587180	
	20 ft. (6.0 m)	587181	
	25 ft. (7.6 m)	587182	
19	Battery Cable, 10 ft. (3.0 m)	587205	
19	Battery Cable, 15 ft. (4.5 m)	587301	
19	Battery Cable, 20 ft. (6.0 m)	587302	

15_Analog Displays & Gauges – Analog Gauge Display
Set up for Mechanical Remote Controls with MCM Converter



Hydraulic Steering

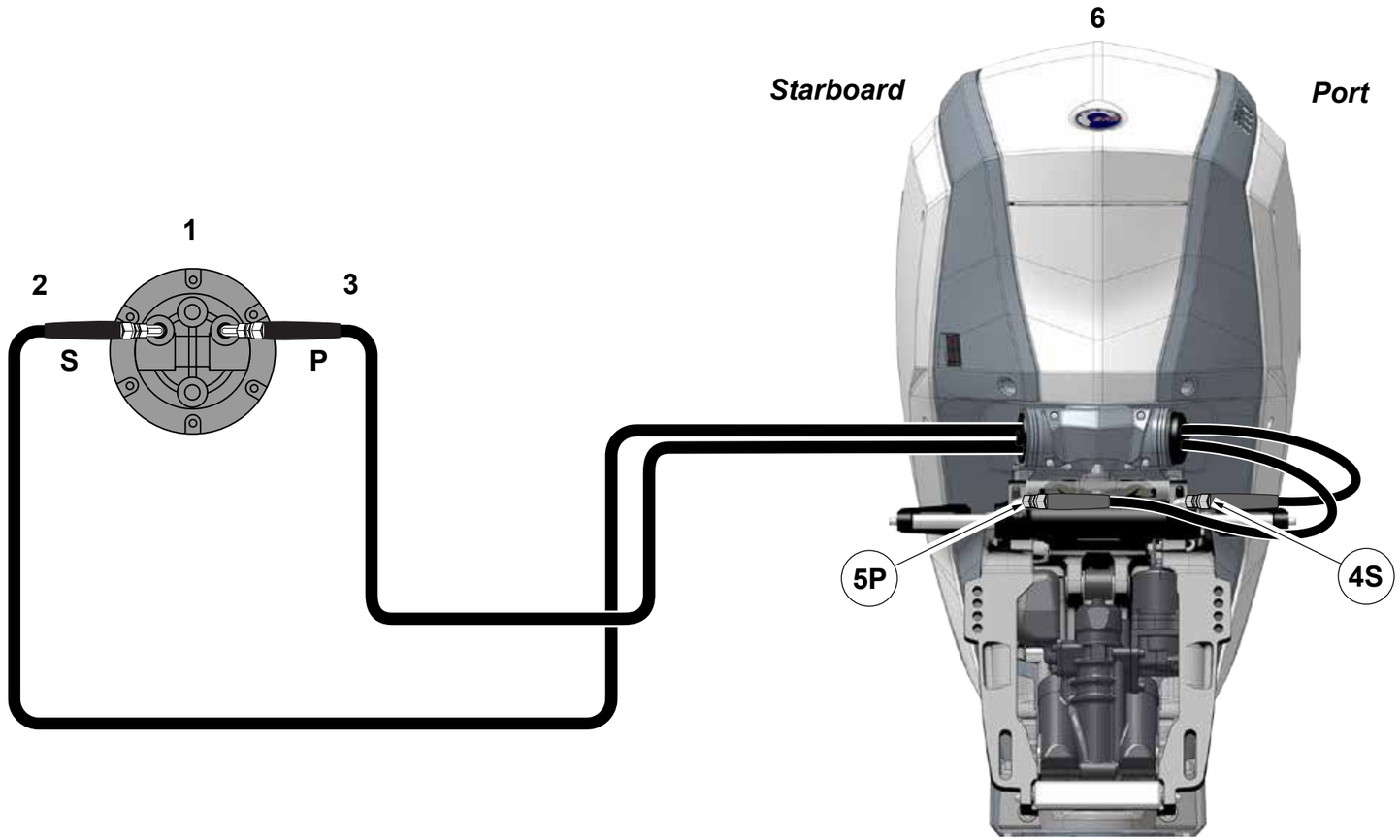
01_1 Station / 1 Outboard, TRAC+

Application:

1 Station
1 *Evinrude E-TEC G2* outboard
TRAC+
Standard rotation

Ref	Description	P/N	Notes
1	Helm	–	
2	Steering Hose, Starboard	–	
3	Steering Hose, Port	–	
4	Hose Connection to Steering Cylinder, Starboard	–	
5	Hose Connection to Steering Cylinder, Port	–	
6	Outboard	–	

01_Steering Hose Diagram
1 Station
1 Engine:
TRAC+
Standard Rotation



02_1 Station / 1 Outboard Full Featured

Application:

1 Station

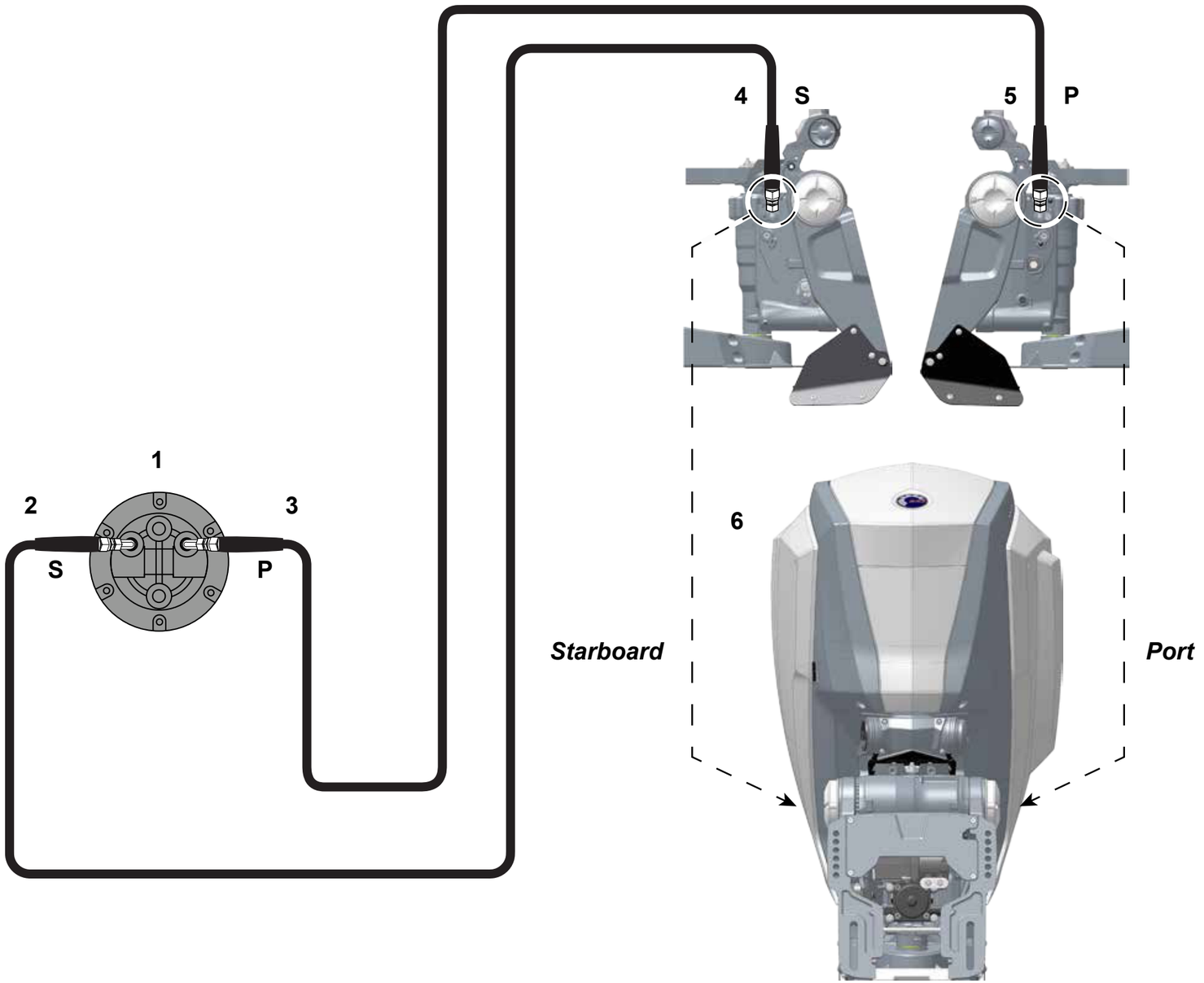
1 *Evinrude E-TEC G2* outboard

DPS or non-DPS

Standard rotation

Ref	Description	P/N	Notes
1	Helm	–	
2	Steering Hose, Starboard	–	
3	Steering Hose, Port	–	
4	Hose Connection to Outboard, Starboard	–	
5	Hose Connection to Outboard, Port	–	
6	Outboard	–	

02_Steering Hose Diagram
1 Station
1 Engine:
DPS or non-DPS
Standard Rotation



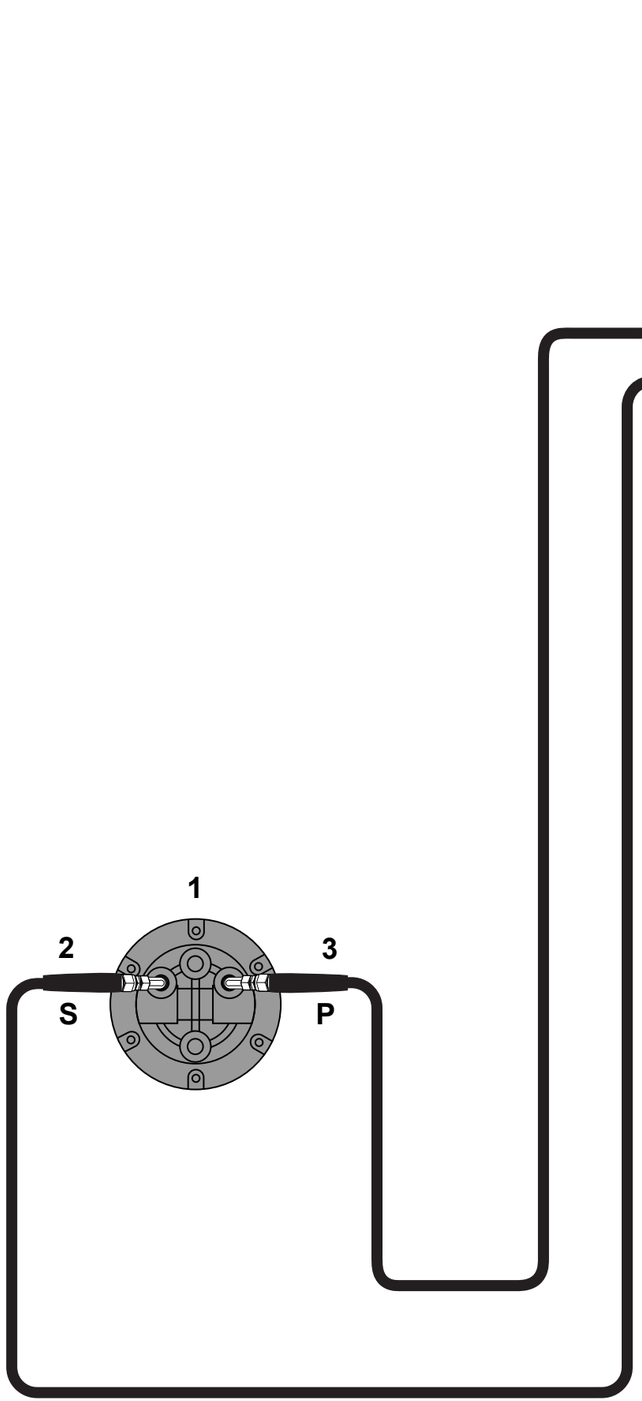
03_1 Station / 2 Outboards

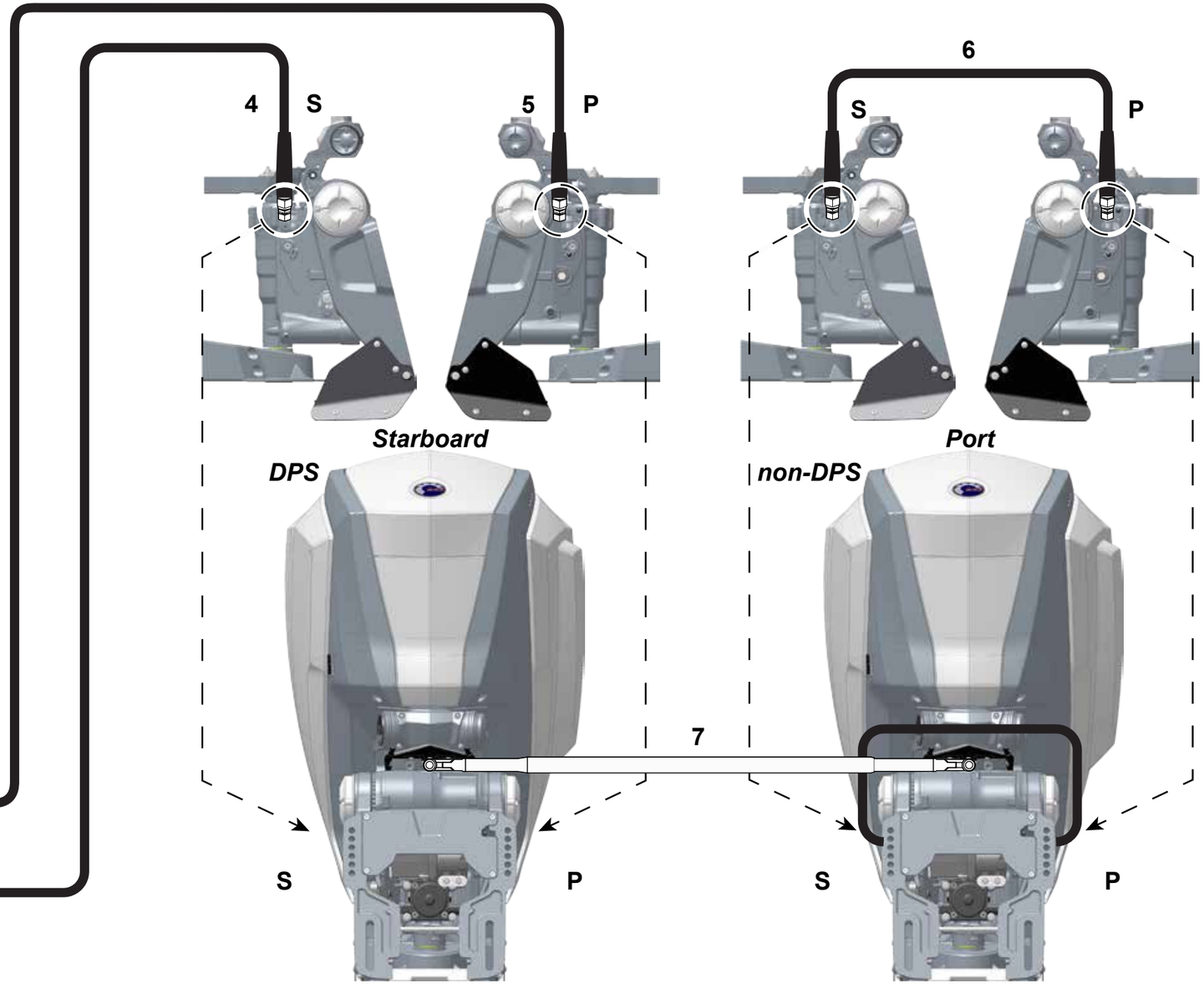
Application:

1 Station
2 *Evinrude E-TEC G2* outboards
1 DPS, 1 non-DPS
1 standard rotation, 1 counter-rotation
Mechanical Tie Bar

Ref	Description	P/N	Notes
1	Helm	–	
2	Steering Hose, Starboard	–	Helm to tee-fitting
3	Steering Hose, Port	–	Helm to tee-fitting
4	Steering Hose, Starboard	–	Hose to Starboard Outboard, Starboard Connection
5	Steering Hose, Port	–	Hose to Starboard Outboard, Port Connection
6	By-Pass Hose	–	non-DPS outboard
7	Tie Bar Kits	–	
8	Two Outboard, 24 to 29 inch spacing	766568	
9	Two Outboard, 29 to 36 inch spacing	766569	

03_Steering Hose Diagram
1 Station
2 Engines:
1 DPS, 1 non-DPS
1 Standard Rotatin & 1 Counter Rotation
Mechanical Tie Bar





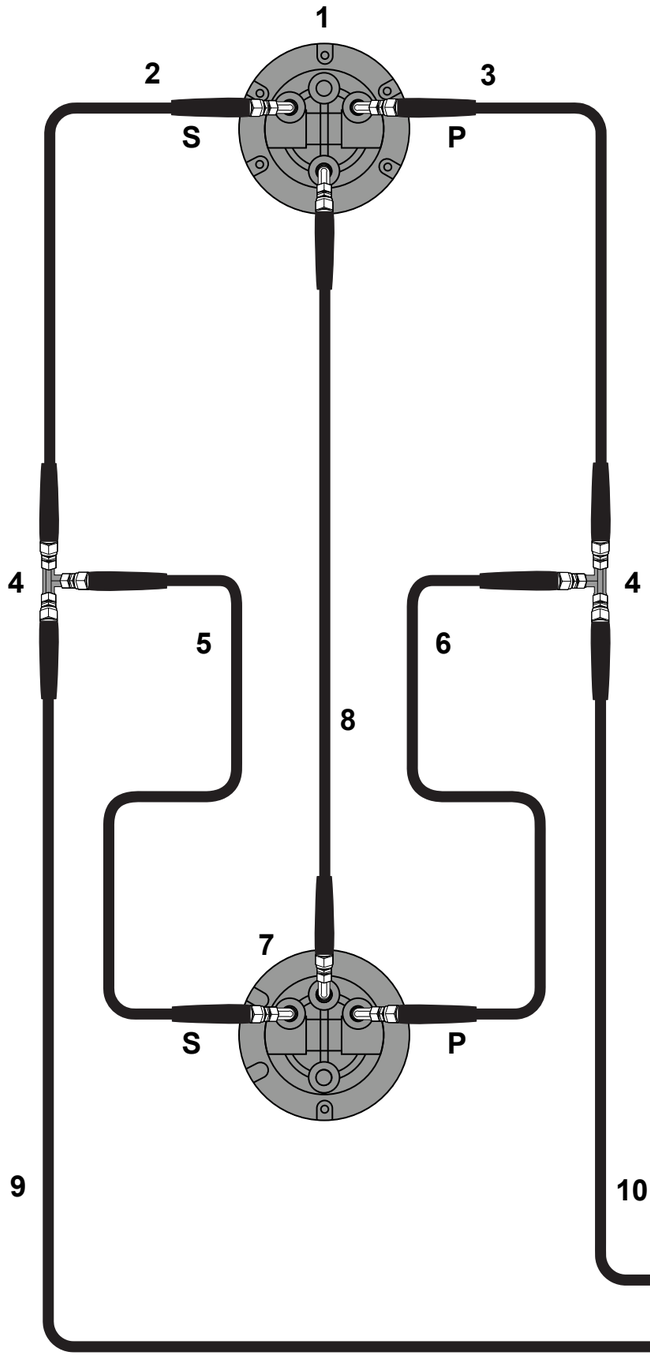
04_2 Stations / 2 Outboards

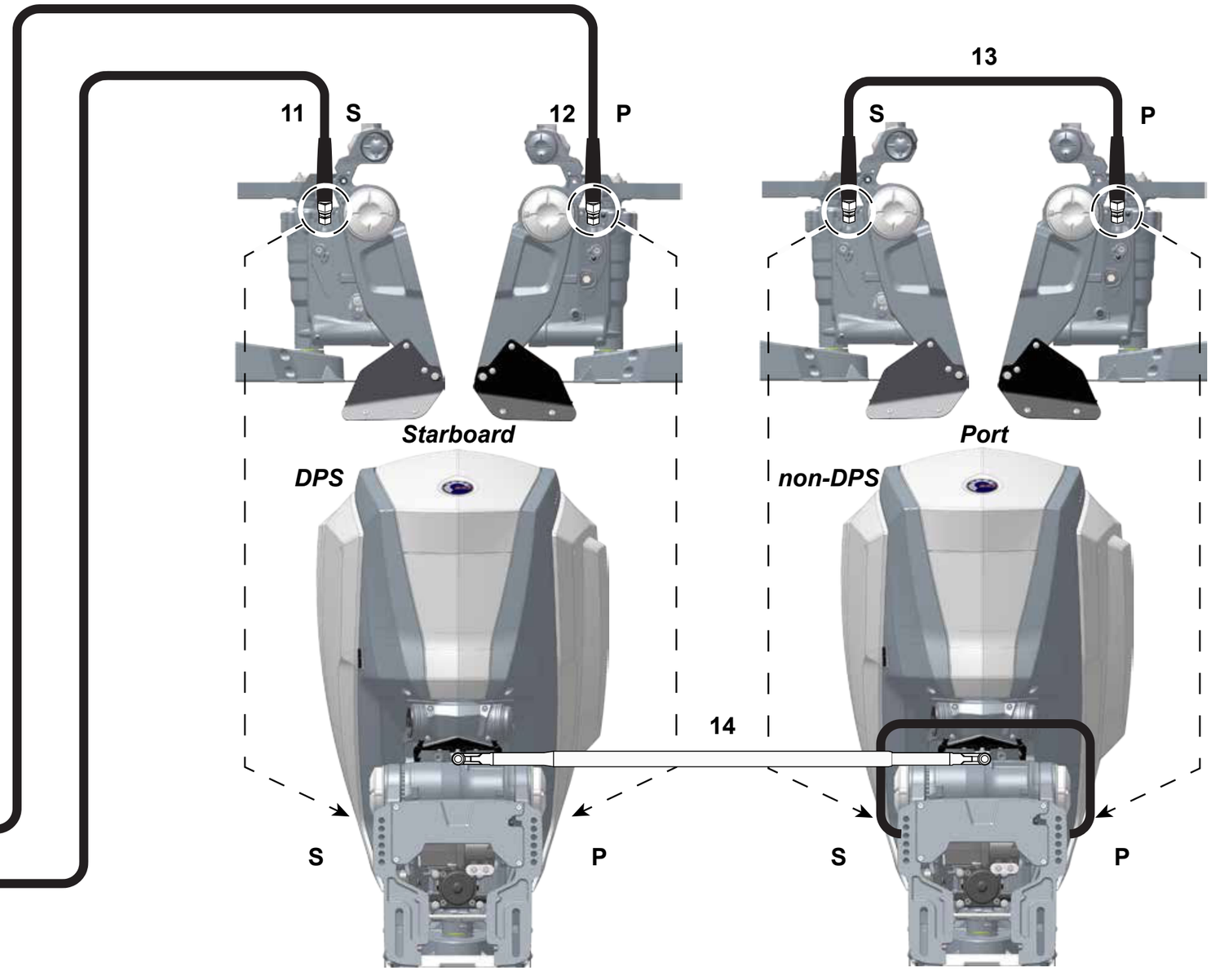
Application:

2 Stations
2 *Evinrude E-TEC G2* outboards
1 DPS, 1 non-DPS
1 standard rotation, 1 counter-rotation
Mechanical Tie Bar

Ref	Description	P/N	Notes
1	Helm, Upper Station (with Vented Fill Plug)	–	
2	Steering Hose, Starboard	–	Upper Helm to Tee Fitting
3	Steering Hose, Port	–	Upper Helm to Tee Fitting
4	Tee-Fitting	–	
5	Steering Hose, Starboard	–	Lower Helm to Tee Fitting
6	Steering Hose, Port	–	Lower Helm to Tee Fitting
7	Helm, Lower Station (with Non-Vented Fill Plug)	–	
8	Compensating Line	–	Upper to Lower Helm
9	Steering Hose, Starboard	–	Helm Tee Fitting to Outboard
10	Steering Hose, Port	–	Helm Tee Fitting to Outboard
11	Hose Connection to Outboard	–	Starboard
12	Hose Connection to Outboard	–	Port
13	By-Pass Hose	–	non-DPS outboard
14	Tie Bar Kits	–	
	Two Outboard, 24 to 29 inch spacing	766568	
	Two Outboard, 29 to 36 inch spacing	766569	

04_Steering Hose Diagram
2 Stations
2 Engines:
1 DPS, 1 non-DPS
1 Standard Rotation
1 Counter Rotation
Mechanical Tie Bar





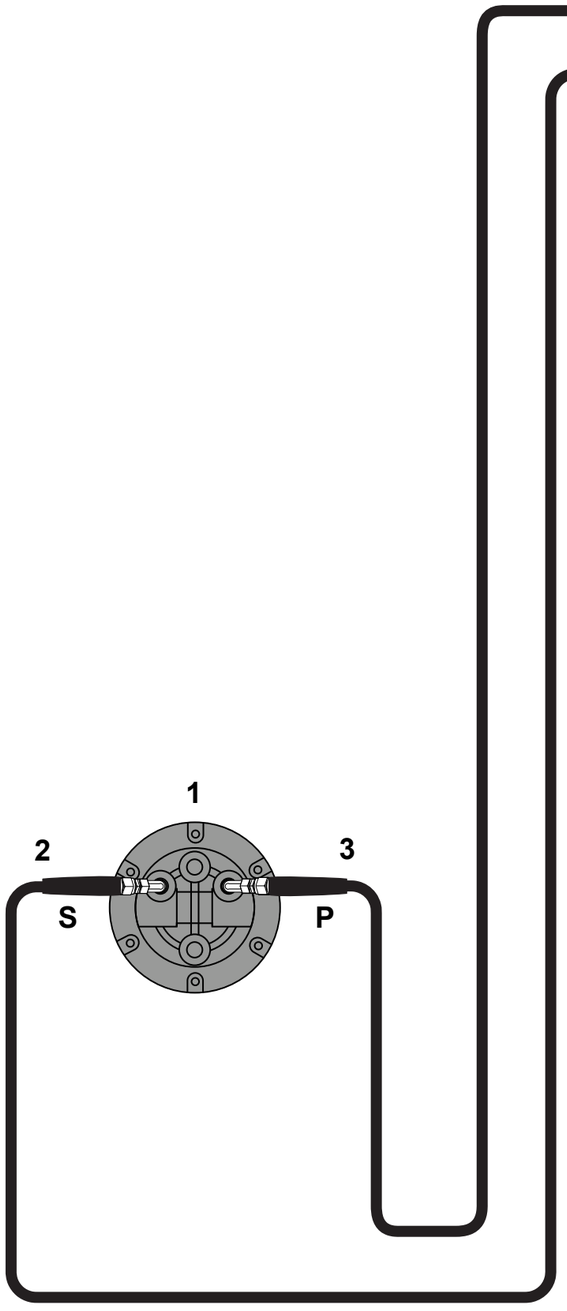
05_1 Station / 3 Outboards

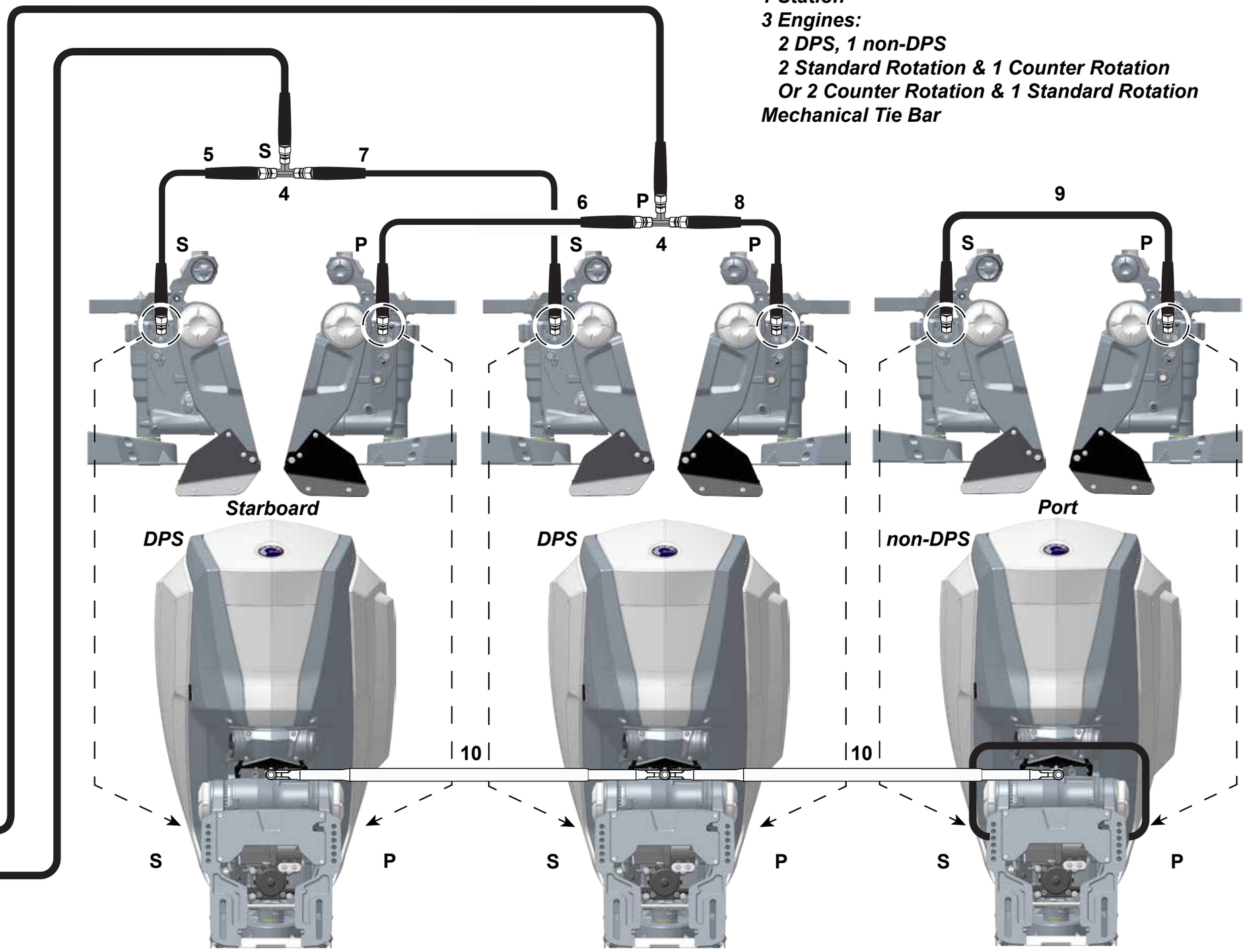
Application:

1 Station
3 *Evinrude E-TEC G2* outboards
2 DPS, 1 non-DPS
2 standard rotation, 1 counter-rotation
Or, 2 counter rotation, 1 standard rotation
Mechanical Tie Bars

Ref	Description	P/N	Notes
1	Helm	–	
2	Steering Hose, Starboard	–	Helm to Tee Fitting
3	Steering Hose, Port	–	Helm to Tee Fitting
4	Tee-Fitting	–	
5	Steering Hose, Starboard	–	Tee Fitting to Starboard Outboard, Starboard
6	Steering Hose, Port	–	Tee Fitting to Starboard Outboard, Port Connection
7	Steering Hose, Starboard	–	Tee Fitting to Port Outboard, Starboard Connection
8	Steering Hose, Port	–	Tee Fitting to Port Engin, Port Connection
9	By-Pass Hose	–	non-DPS outboard
10	Tie Bar Kits	–	
	Three/Four Outboard, 24 to 29 inch spacing	766608	
	Three/Four Outboard, 29 to 36 inch spacing	766609	

05_Steering Hose Diagram
1 Station
3 Engines:
2 DPS, 1 non-DPS
2 Standard Rotation & 1 Counter Rotation
Or 2 Counter Rotation & 1 Standard Rotation
Mechanical Tie Bar





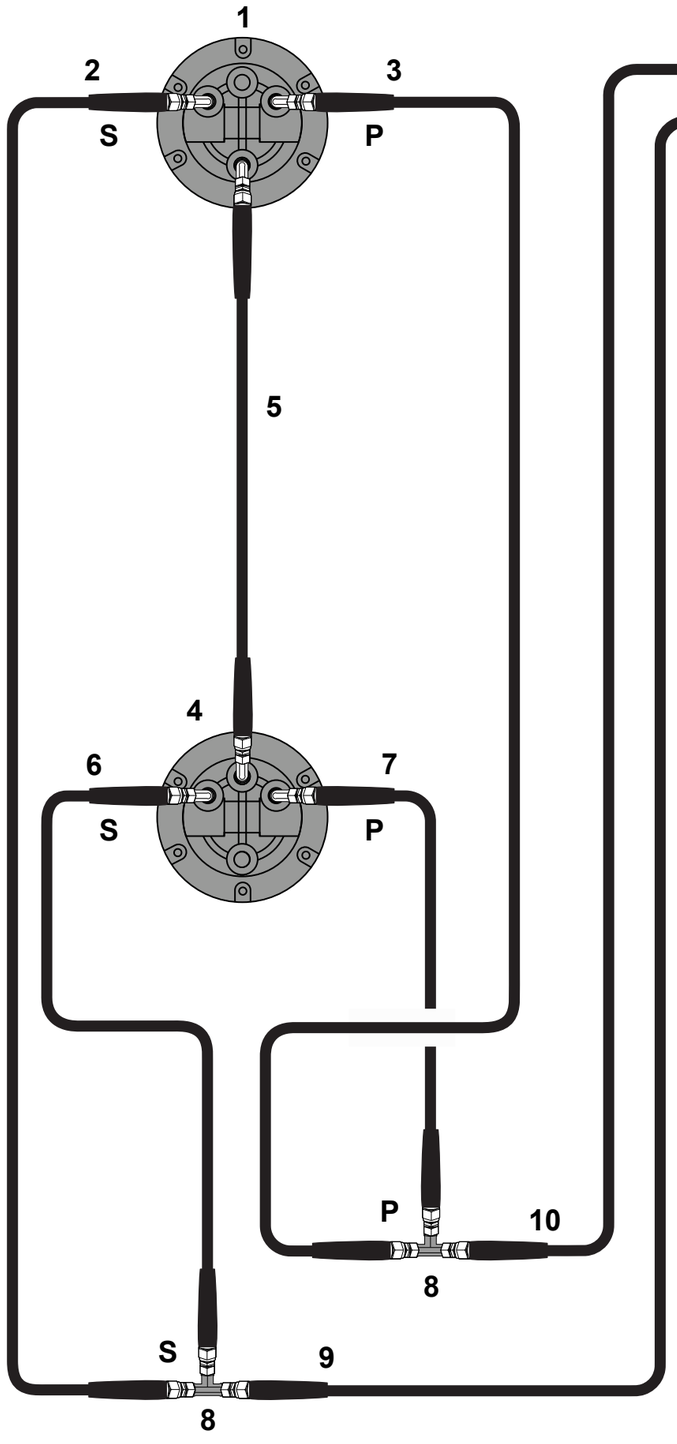
06_2 Stations / 3 Outboards

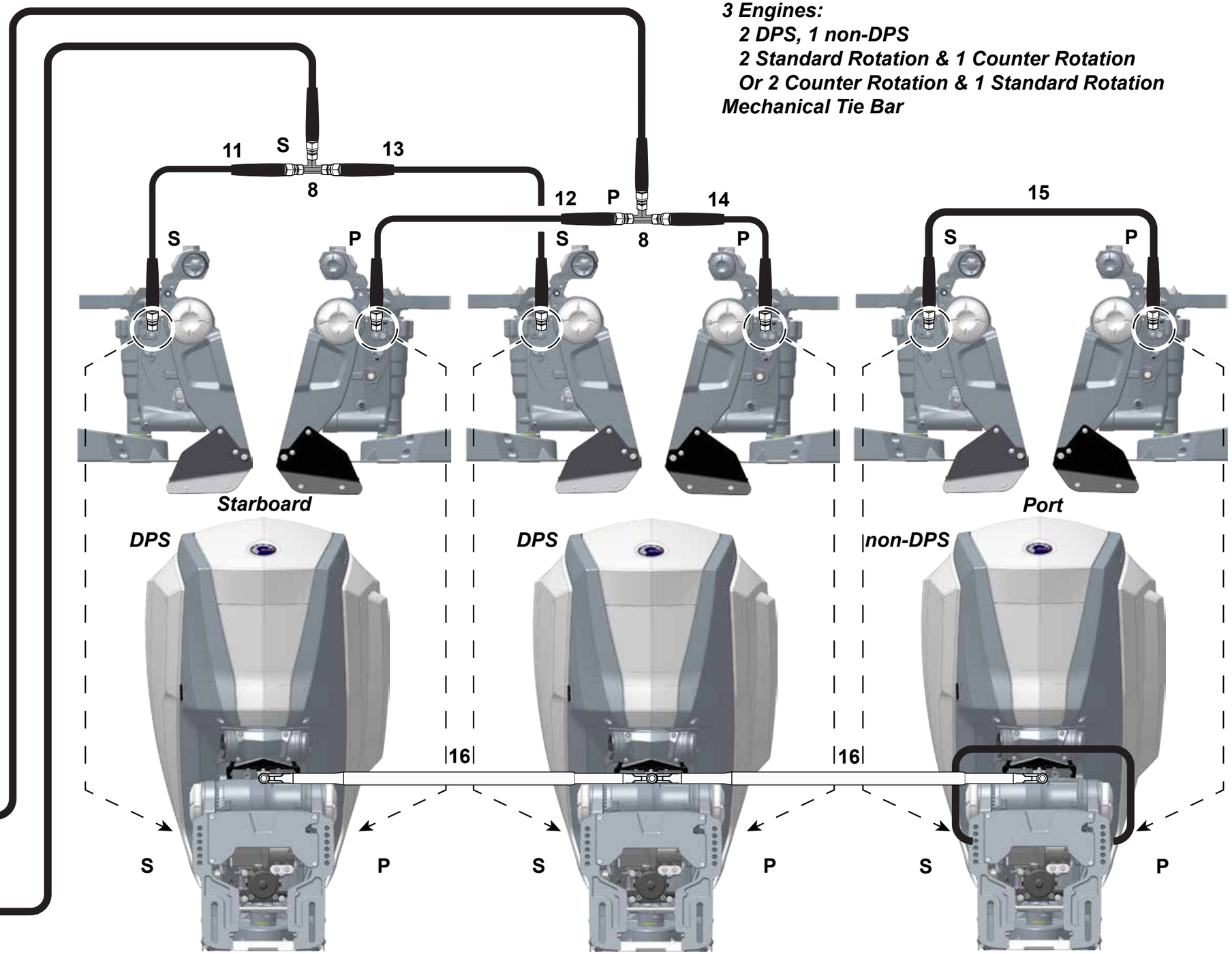
Application:

2 Stations
3 *Evinrude E-TEC G2* outboards
2 DPS, 1 non-DPS
2 standard rotation, 1 counter-rotation
Or, 2 counter rotation, 1 standard rotation
Mechanical Tie Bars

Ref	Description		P/N	Notes
1	Helm, Upper Station (with Vented Fill Plug)		–	
2	Steering Hose, Starboard			Upper Helm to Starboard Tee Fitting
3	Steering Hose, Port		–	Upper Helm to Port Tee Fitting
4	Helm, Lower Station (with Non-Vented Fill Plug)		–	
5	Compensating Line		–	Upper to Lower Helm
6	Steering Hose, Starboard	–		Tee Fitting - Lower Helm to Starboard Tee Fitting
7	Steering Hose, Port		–	Tee Fitting - Lower Helm to Port Tee Fitting
8	Tee-Fitting		–	
9	Steering Hose, Starboard		–	Tee Fitting to Tee Fitting
10	Steering Hose, Port		–	Tee Fitting to Tee Fitting
11	Steering Hose, Starboard		–	Tee Fitting to Starboard Outboard, Starboard
12	Steering Hose, Port		–	Tee Fitting to Starboard Outboard, Port Connection
13	Steering Hose, Starboard		–	Tee Fitting to Center Outboard, Starboard Connection
14	Steering Hose, Port		–	Tee Fitting to Center Outboard, Port Connection
15	By-Pass Hose		–	Non-IPS outboard
16	Tie Bar Kits		–	
	Three/Four Outboard, 24 to 29 inch spacing		766608	
	Three/Four Outboard, 29 to 36 inch spacing		766609	

06_Steering Hose Diagram
2 Stations
3 Engines:
2 DPS, 1 non-DPS
2 Standard Rotation & 1 Counter Rotation
Or 2 Counter Rotation & 1 Standard Rotation
Mechanical Tie Bar





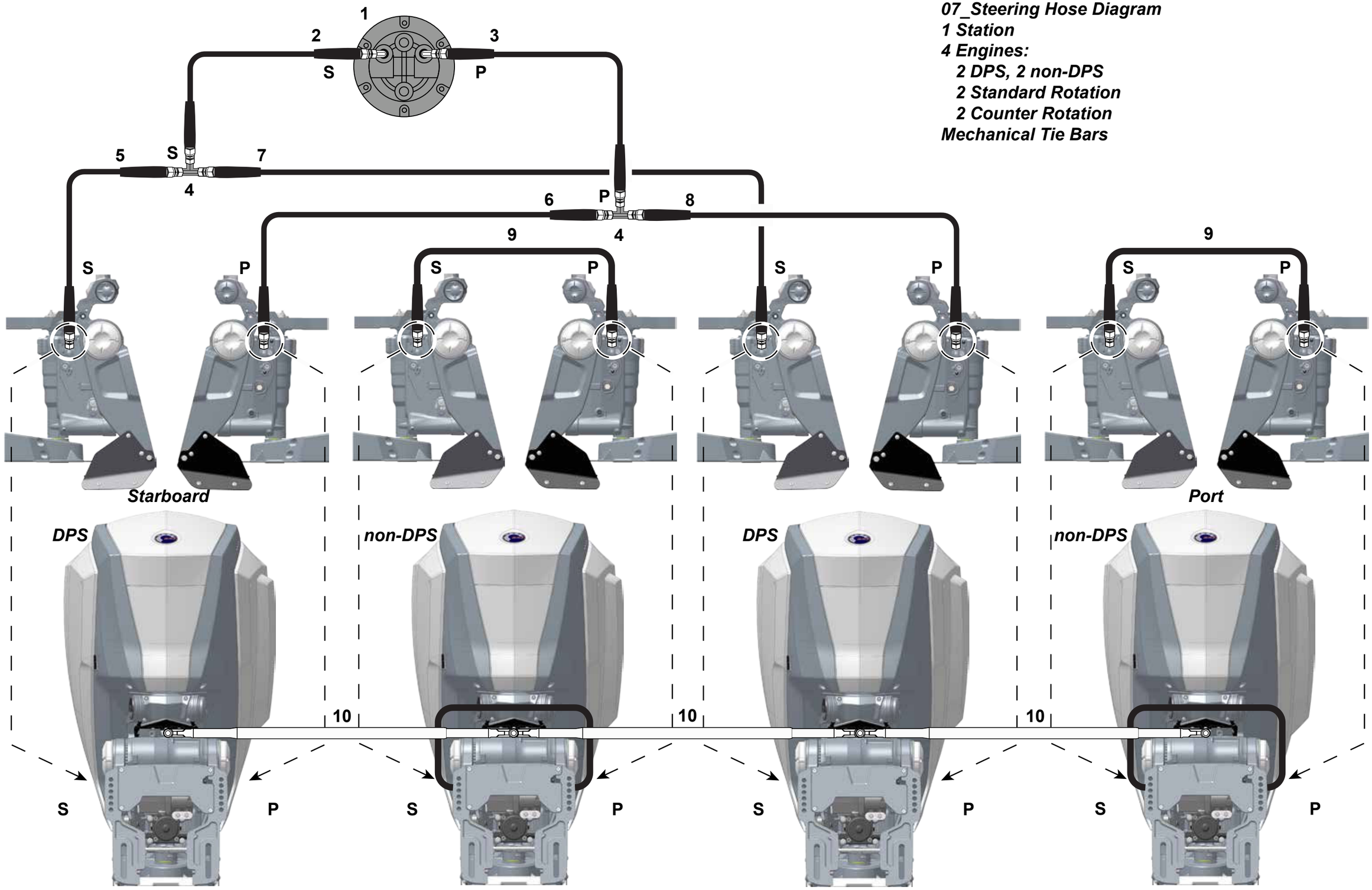
07_1 Station / 4 Outboards

Application:

1 Station
4 *Evinrude E-TEC G2* outboards
2 DPS, 2 non-DPS
2 standard rotation, 2 counter-rotation
Mechanical Tie Bars

Ref	Description	P/N	Notes
1	Helm	–	
2	Steering Hose, Starboard	–	Helm to Tee Fitting
3	Steering Hose, Port	–	Helm to Tee Fitting
4	Tee-Fitting	–	
5	Steering Hose, Starboard	–	Tee Fitting to Starboard Outboard, Starboard
6	Steering Hose, Port	–	Tee Fitting to Starboard Outboard, Port Connection
7	Steering Hose, Starboard	–	Tee Fitting to Port Center Outboard, Starboard
8	Steering Hose, Port	–	Tee Fitting to Port Center Outboard, Port Connection
9	By-Pass Hose	–	Non-DPS outboards: Starboard Center and Port Center
10	Tie Bar Kits	–	
	Three/Four Outboard, 24 to 29 inch spacing	766608	
	Three/Four Outboard, 29 to 36 inch spacing	766609	

07_Steering Hose Diagram
1 Station
4 Engines:
2 DPS, 2 non-DPS
2 Standard Rotation
2 Counter Rotation
Mechanical Tie Bars



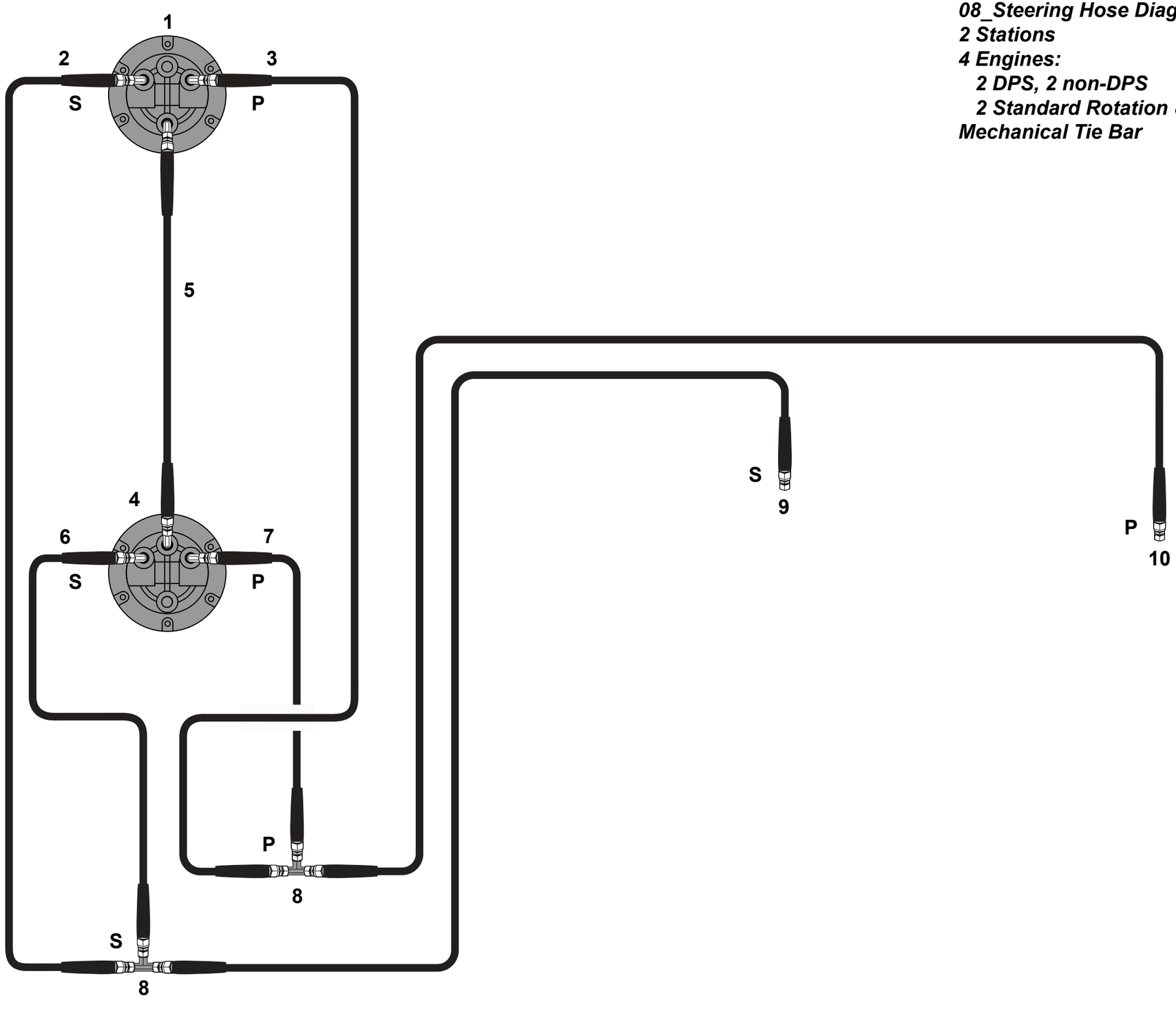
08_2 Stations / 4 Outboards

Application:

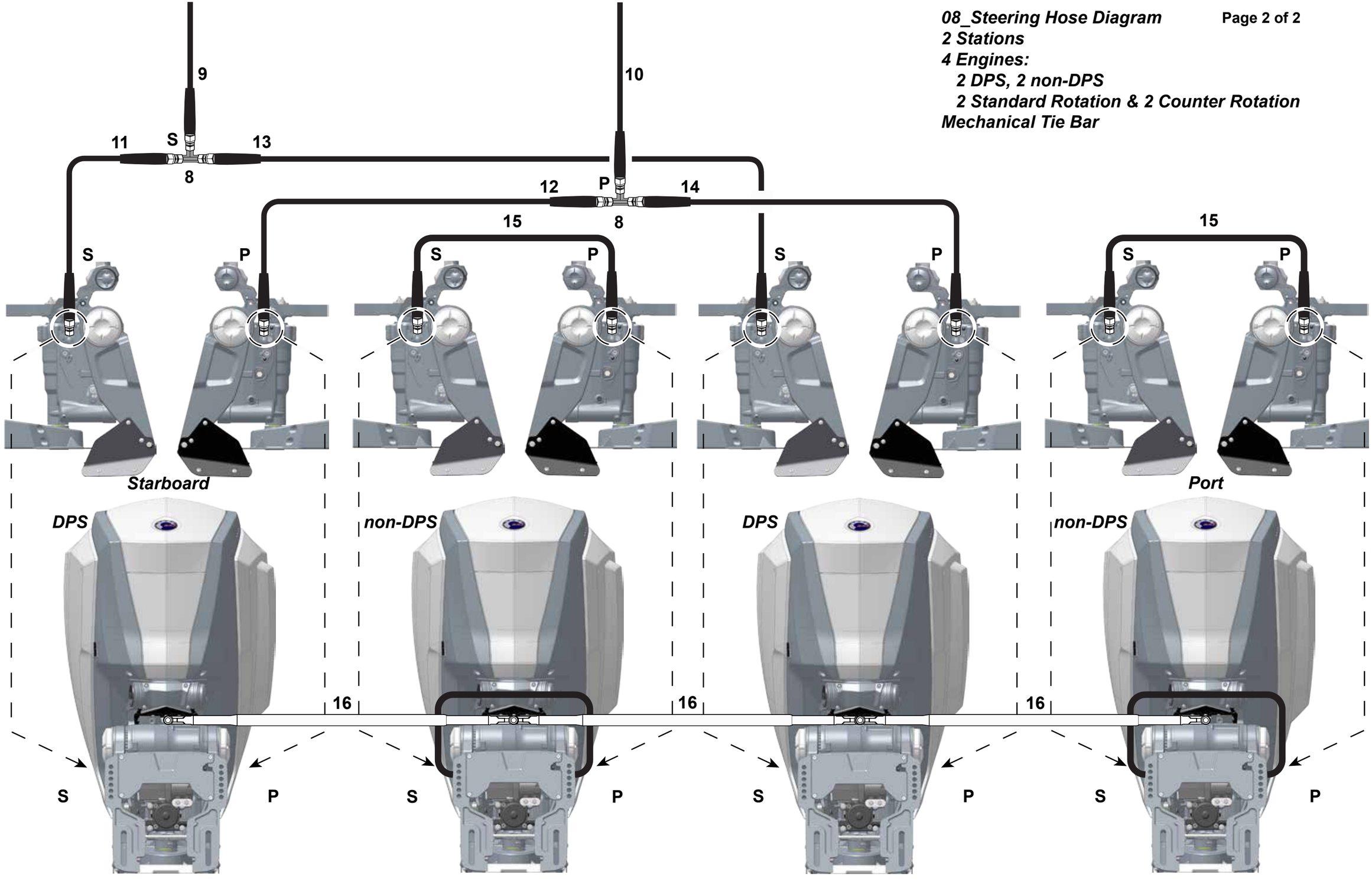
2 Station
4 *Evinrude E-TEC G2* outboards
2 DPS, 2 non-DPS
2 standard rotation, 2 counter-rotation
Mechanical Tie Bars

Ref	Description	P/N	Notes
1	Helm, Upper Station (with Vented Fill Plug)	–	See page 1 of 2
2	Steering Hose, Starboard		Upper Helm to Starboard Tee Fitting
3	Steering Hose, Port	–	Upper Helm to Port Tee Fitting
4	Helm, Lower Station (with Non-Vented Fill Plug)	–	
5	Compensating Line	–	Upper to Lower Helm
6	Steering Hose, Starboard	–	Tee Fitting - Lower Helm to Starboard Tee Fitting
7	Steering Hose, Port	–	Tee Fitting - Lower Helm to Port Tee Fitting
8	Tee-Fitting	–	
9	Steering Hose, Starboard	–	Helm Tee Fitting to Outboard Tee Fitting (Continue on page 2 of 2)
10	Steering Hose, Port	–	Helm Tee Fitting to Outboard Tee Fitting (Continue on page 2 of 2)
11	Steering Hose, Starboard	–	Tee Fitting to Starboard Outboard, Starboard Connection
12	Steering Hose, Port	–	Tee Fitting to Starboard Outboard, Port Connection
13	Steering Hose, Starboard	–	Tee Fitting to Starboard Center Outboard, Starboard
14	Steering Hose, Port	–	Tee Fitting to Starboard Center Outboard, Port
15	By-Pass Hose	–	Non-DPS outboard
16	Tie Bar Kits	–	
	Three/Four Outboard, 24 to 29 inch spacing	766608	
	Three/Four Outboard, 29 to 36 inch spacing	766609	

08_Steering Hose Diagram
2 Stations
4 Engines:
2 DPS, 2 non-DPS
2 Standard Rotation & 2 Counter Rotation
Mechanical Tie Bar



08_Steering Hose Diagram
2 Stations
4 Engines:
2 DPS, 2 non-DPS
2 Standard Rotation & 2 Counter Rotation
Mechanical Tie Bar



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